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ABSTRACT

This document is designed for use by teachers of Agricultural Production and Management courses in North Carolina. It updates the competencies and content outlines from the previous guide. It lists core and optional competencies for two courses in seven areas as follows: leadership; supervised agricultural experience programs; animal science; plant and soil science; agricultural mechanics; agricultural business management; and forestry and wildlife management. For each unit of instruction, the guide includes unit titles, the competencies to be taught, the suggested teaching length, the specific instructional objectives related to each competency, general information related to the unit, a content outline, suggested teaching activities, and references for the unit. A 113-item reference list is included. It includes 83 books, 15 sources of audiovisual materials, 7 sources of computer programs in agriculture, and 8 sources of curriculum guides and instructional materials. The reference list includes textbooks on the state adopted textbook list and many that were not adopted by North Carolina. (CML)

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CURRICULUM GUIDE

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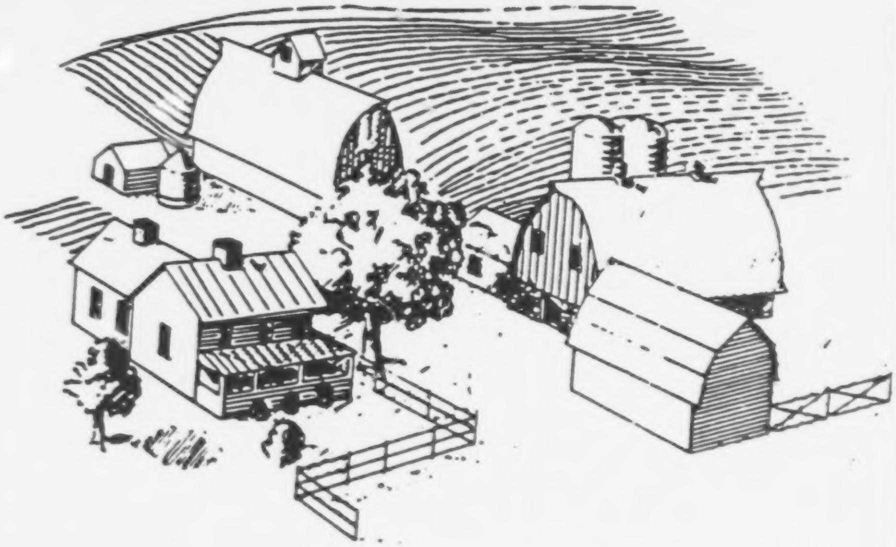

Agricultural Production and Management I
Course No. 6811
Agricultural Production and Management II
Course No. 6812

Bob Etheridge, State Superintendent
North Carolina Department of Public Instruction

Division of Vocational Education Services
Raleigh, North Carolina
August 1990

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PREFACE

Production agriculture has been in the past and continues to be a dynamic industry. Agricultural commodities produced in North Carolina annually account for over $4 billion in sales. Many agricultural products produced in North Carolina are exported to other countries. The success of agriculture is vital to the welfare and progress of North Carolina, the nation, and the world. Agricultural success is dependent upon an adequate number of well-trained people to fill the variety of occupations in the agricultural industry. Students who complete the Agricultural Production and Management courses in the secondary Agricultural Education programs in North Carolina must be prepared to enter the many occupations in agricultural production in North Carolina.

Changes occur in agricultural production and management technology at a rapid pace, and individuals who are preparing for careers in production agriculture must be aware of the changes in order to be successful. In addition, those who are preparing for careers that provide services in the production, marketing, and processing of agricultural products would benefit from courses in agricultural production and management in order to provide those services in a more efficient manner.

The Agricultural Production and Management curriculum consists of a two-year sequence of courses designed to prepare students for entry-level employment and/or for advanced training and education for careers in agricultural production. Students enrolled in Agricultural Production and Management sequence should have completed the introductory course in agriculture, Introduction to Agriculture and Natural Resources, prior to beginning this curriculum. Competencies to be developed are classified into two categories - **Core** and **Optional**. All students enrolled in Agricultural Production and Management Courses should receive instruction in the core competencies. Teachers should select from optional competencies in order to meet the needs of their local communities and their students.

As a method of providing practical experiences in agriculture, each student enrolled in Agricultural Production and Management courses should be involved in a supervised agricultural experience program designed to supplement and provide application of principles of agriculture learned in the school classroom and laboratories. Instruction in developing and conducting supervised agricultural experience programs is incorporated into this curriculum guide. In addition, leadership abilities needed for success in agricultural production careers are included in the competencies to be developed by students enrolled in these courses. FFA activities are an integral part of the total instructional program and provide students an opportunity to practice many leadership, production, and management skills learned in the classroom and laboratories.

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ACKNOWLEDGEMENTS

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Gerald Barlowe, Lakewood High School
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INTRODUCTION TO THE CURRICULUM GUIDE

This curriculum guide is designed to be used by teachers of Agricultural Production and Management courses in North Carolina in planning and delivering instruction for their students. In addition to changes in the competencies and the content outlines, teachers should note a fundamental change in this curriculum guide. Previously, almost all of the competencies listed in the curriculum guide were designated as **Core Competencies.** The curriculum revision committee determined that too many competencies had been previously identified as core competencies, suggesting that they should be included in every Agricultural Production and Management course taught in North Carolina. Because of the great diversity of agricultural production enterprises in North Carolina, an effort was made to designate basic competencies in this curriculum as core competencies, and identify **Optional Competencies** that may be included at the local level, depending upon community needs. A complete list of core and optional competencies is found on pages 3-7 in this curriculum guide.

Units of instruction were developed in seven areas of agriculture: (1) Leadership, (2) Supervised Agricultural Experience Programs, (3) Animal Science, (4) Plant and Soil Science, (5) Agricultural Mechanics, (6) Agricultural Business Management, and (7) Forestry and Wildlife Management. In each case, the units of instruction were developed with the agricultural producer in mind.

For each unit of instruction, the information included in this curriculum guide includes the unit titles, the competencies to be taught as a part of each unit of instruction, the suggested teaching length, the specific instructional objectives related to each competency, and any general information related to the unit. This preliminary information is followed by a content outline, suggested teaching activities, and references for the unit. References are numbered, and a complete list of references is found at the end of this curriculum guide.

Content outlines were included to give teachers some basic guidelines in planning for instruction. The curriculum development committee recognizes that agricultural technology is ever-changing, and specific agricultural content could easily become outdated. These content outlines should be adapted as agricultural technology changes.

Teaching and learning activities were suggested for each unit of instruction. These activities represent the ideas of those who worked on this curriculum revision. These suggestions were intended to stimulate teachers to think of other creative ways of teaching agriculture to their students and should not be interpreted as a list of things that must be done when teaching these units.

The reference list includes textbooks on the state adopted textbook list and many that were not adopted by North Carolina. Agriculture teachers are encouraged to use a variety of reference materials in teaching their students, and certainly there are more references available than can be listed in a curriculum guide such as this one. For that reason, a list of curriculum materials centers is provided from which teachers may order reference materials, videotapes, computer programs, slide programs, 16mm films, pamphlets, and brochures to supplement information found in textbooks. Teachers should also keep in mind that new references are being developed annually, and reference lists should be updated as new information becomes available.

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Units of Instruction

The following units of instruction are included in the Agricultural Production and Management sequence:

Agricultural Production and Management I, Course No. 6811

A. Leadership
  1. Opportunities Available in the FFA
  2. Conducting Business Meetings
  3. Leading a Group Discussion

B. Supervised Agricultural Experience Programs
  4. Developing Plans for Supervised Agricultural Experience Programs
  5. Maintaining Records for SAE Programs

C. Animal Science
  6. The Livestock and Poultry Industry in North Carolina
  7. Feed Nutrients for Farm Animals
  8. Digestive Systems for Farm Animals
  9. Balancing Rations for Livestock and Poultry
  10. Evaluation of Livestock and Poultry
  11. Fitting and Showing Livestock
  12. Producing Livestock and Poultry in North Carolina

D. Plant and Soil Science
  13. Introduction to Soil Science
  14. Measuring Agricultural Land Areas
  15. Reading Soil Maps
  16. Controlling Soil Erosion
  17. Essential Plant Nutrients
  18. Nutrient Deficiencies of Crops
  19. Using Soil Test Results
  20. Controlling Weeds in Agricultural Crops

E. Agricultural Mechanics
  21. Using Agricultural Tools and Equipment Safely
  22. Cutting Metal
  23. Welding With Arc and Oxyacetylene Welding Equipment
  24. Sharpening Tools
  25. Internal Combustion Engines
  26. Making Minor Repairs on Farm Machinery
  27. Operating a Tractor Safely
  28. Laying Out a Foundation for Agricultural Buildings
  29. Agricultural Project Construction

F. Agricultural Business Management
  30. Types of Agricultural Business Organization
  31. Importance of Agricultural Records
  32. Agricultural Enterprise Budget Analysis

G. Forestry and Wildlife Management
  33. Managing Private Woodlands
  34. Managing Wildlife on Private Land
  35. Harvesting Wildlife

Agricultural Production and Management II, Course No. 6812

A. Leadership
   1. Opportunities Available in the FFA
   2. The FFA Organization
   3. Conducting Business Meetings
   4. Public Speaking

B. Supervised Agricultural Experience Programs
   5. Developing Plans for Supervised Agricultural Experience Programs
   6. Maintaining Records for SAE Programs

C. Animal Science
   7. Equipment and Facilities Used in Livestock and Poultry Production
   8. Breeding and Management of Livestock and Poultry
   9. Diseases and Parasites of Farm Animals
   10. Producing Livestock and Poultry in North Carolina
   11. Government Regulations Related to Livestock and Poultry Production

D. Plant and Soil Science
   12. Controlling Insects in Crops
   13. Controlling Diseases in Field Crops
   14. Using Pesticides in Agriculture
   15. Producing Major Farm Crops

E. Agricultural Mechanics
   16. Welding Out-of-Position
   17. Using Concrete in Agricultural Buildings and Structures
   18. Installing Water Systems for Agriculture
   19. Wiring Electrical Circuits
   20. Maintaining Tractors and Machinery
   21. Making Field Adjustments on Agricultural Machinery and Equipment
   22. Operating a Tractor Under Varying Field Conditions
   23. Constructing Agricultural Projects

F. Agricultural Business Management
   24. Identifying Fixed and Variable Costs
   25. Preparing Inventories and Financial Statements for Agricultural Businesses
   26. Securing Credit for Agricultural Businesses
   27. Marketing Agricultural Products
   28. Completing Federal and State Agricultural Income Tax Forms

G. Forestry and Wildlife Management
   29. Managing Private Woodlands
   30. Managing Wildlife on Private Land
   31. Harvesting Wildlife

AGRICULTURAL PRODUCTION AND MANAGEMENT I
Course No. 6811

Competency Statement	Core	Optional
A. Leadership/FFA		
001. Explain opportunities available to students in the FFA	x	
002. Preside over chapter and committee meetings	x	
003. Perform five parliamentary procedure abilities	x	
004. Lead a 15 minute group discussion		x
B. Supervised Agricultural Experience Programs		
005. Develop a personal written SAE program plan	x	
006. Enter income, expenses and work performed in a record book	x	
C. Animal Science		
007. Describe the importance of the livestock and poultry industry in North Carolina	x	
008. Describe the functions and sources of the feed nutrients for farm animals	x	
009. Explain the parts and functions of the digestive system of farm animals	x	
010. Balance a ration for three different kinds of livestock or poultry		x
011. Select and grade livestock		x
012. Select and judge dairy cattle		x
013. Select and grade poultry and poultry products		x
014. Prepare and show animals in a fair or show		x
015. Describe the approved production practices for major livestock, poultry, and specialty animals raised in the community	x	
D. Plant and Soil Science		
016. Identify and classify soils according to land capability class	x	
017. Demonstrate the ability to measure and calculate land areas		x
018. Demonstrate the ability to read soil maps and to interpret the terms and symbols on maps		x
019. Prepare a plan to control erosion on a given farm		x

Course No. 6811

Competency Statement	Core	Optional
D. Plant and Soil Science (cont)		
020. Identify the essential nutrients required for production of farm crops	x	
021. Identify major plant nutrient deficiencies and list methods to correct those deficiencies		x
022. Interpret a soil sample report for a given crop	x	
023. Identify weeds and list methods of weed control	x	
E. Agricultural Mechanics		
024. Follow safety rules while using tools, machinery, and equipment	x	
025. Demonstrate two methods of cutting metal	x	
026. Make bead, groove, and fillet welds in the flat position	x	
027. Demonstrate the ability to sharpen tools		x
028. Describe the principles of operation of internal combustion engines	x	
029. Make repairs on agricultural machinery and equipment		x
030. Mount equipment on a tractor		x
031. Lay out a foundation for a building using stakes and batter boards		x
032. Plan and construct an agricultural project from wood and/or metal		x
F. Agricultural Business Management		
033. Describe the types of agricultural business organization	x	
034. Explain the importance and uses of agricultural business records	x	
035. Evaluate a budget for an agricultural enterprise		x
G. Forestry and Wildlife Management		
036. List and describe principles involved in managing private woodlands		x
037. List and describe principles involved in managing wildlife on private land		x
038. Describe safe practices in harvesting wildlife species		x

AGRICULTURAL PRODUCTION AND MANAGEMENT II
Course No. 6812

Competency Statement	Core	Optional
A. Leadership/FFA		
001. Explain opportunities available to students in the FFA	x	
002. Preside over chapter and committee meetings		x
003. Perform ten parliamentary procedure abilities	x	
004. Prepare and present a five minute speech	x	
B. Supervised Agricultural Experience Programs		
005. Develop a personal written SAE program plan	x	
006. Enter income, expenses and work performed in a record book	x	
C. Animal Science		
007. Describe the feeding and housing systems commonly used on the farm	x	
008. Explain the parts and functions of the reproductive systems of livestock and poultry	x	
009. Describe the breeding and management systems commonly used in livestock and poultry production		x
010. List methods of prevention and treatment of parasites of farm animals	x	
011. Describe the common diseases and treatment of diseases of farm animals		x
012. Describe the approved production practices for major livestock, poultry, and specialty animals raised in the community	x	
013. Explain government regulations pertaining to livestock and poultry production in North Carolina		x
D. Plant and Soil Science		
014. Identify common crop insects and their effects on crops grown in the local community	x	
015. Describe common plant diseases and symptoms of damage on crops grown in the community	x	
016. Describe at least four methods of controlling major plant diseases		x
017. Follow safety procedures while applying pesticides	x	
018. Describe the approved production practices for major crops grown in the community	x	

Competency Statement

	Competency Statement	Core	Optional
E.	Agricultural Mechanics		
019.	Demonstrate the ability to weld in horizontal and vertical positions		x
020.	Calculate quantities of concrete materials for a given job	x	
021.	Demonstrate the ability to mix, pour, and finish concrete for a given job		x
022.	Plan a plumbing job		x
023.	Perform basic plumbing tasks		x
024.	Define basic terms associated with electricity and electrical circuits	x	
025.	Describe safety practices for working with electricity	x	
026.	Perform basic electrical wiring tasks		x
027.	Perform routine maintenance on tractors and machinery	x	
028.	Make field adjustments on agricultural machinery and equipment		x
029.	Demonstrate the ability to control the tractor under varying field conditions		x
030.	Prepare a bill of materials for a construction job	x	
031.	Construct an agricultural project from wood and/or metal		x
F.	Agricultural Business Management		
032.	Identify fixed and variable costs of an agricultural enterprise	x	
033.	Complete an inventory of an agricultural business	x	
034.	Prepare a net worth statement of an agricultural business	x	
035.	Explain the various sources of credit		x
036.	Compute interest on long and short term loans	x	
037.	Complete a loan application		x
038.	Describe the various factors which affect marketing of agricultural products	x	
039.	Compare the types of marketing strategies for agricultural products	x	
040.	List information needed to complete federal and state income tax forms for agricultural businesses		x

Competency Statement	Core	Optional
G. Forestry and Wildlife Management		
041. List and describe the principles involved in managing private woodlands		x
042. List and describe principles involved in managing wildlife on private land		x
043. Describe safe practices in harvesting wildlife species		x

AGRICULTURAL PRODUCTION AND MANAGEMENT I

Course No. 6811

Units of Instruction

Suggested Unit Lengths

Instructional Objectives

Content Outlines

Suggested Teaching Activities

Resources

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 1 UNIT LENGTH: 3-5 hrs. TEACHING UNIT TITLE: Opportunities Available in the FFA

COMPETENCY STATEMENT

001. Explain opportunities available to students in the FFA.

INSTRUCTIONAL OBJECTIVES:

001. 01. Provide students with information regarding the FFA Scholarship program.
     02. Promote individual and team activities in the FFA.
     03. Encourage leadership characteristics through FFA participation.

GENERAL COMMENT:

Parts of this unit of instruction may be taught at various times throughout the school year, as FFA opportunities occur on the FFA Calendar of Activities.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction A. FFA Defined 1. Clientele 2. Organization II. FFA Member Awards A. Achievement Awards B. Proficiency Awards C. Star Degree Awards D. Computers in Agriculture E. FFA Scholarship Program III. FFA Contests A. Agricultural Skills B. Leadership Development IV. FFA Degrees A. Types of Membership B. Degree Requirements V. FFA Leadership Programs A. Washington Conference Program B. Made for Excellence C. State and National Programs D. District and/or Federation Programs E. Local Leadership Opportunities	1. Have a state FFA officer visit the chapter to discuss FFA opportunities. 2. Review the aims and purposes of the FFA. 3. Have students read chapter 2 in the FFA Student Handbook. 4. Show the "America, We Are the FFA" Video. 5. Review information in the FFA Proficiency Award Handbook. 6. Have students read chapter 6 in the FFA Student Handbook. 7. Discuss scholarships available to members in North Carolina. 8. Have students read chapter 7 in the FFA Student Handbook. 9. Discuss contest eligibility requirements as set forth in the NC Chapter Guide to FFA Activities. 10. Discuss requirements for degrees of active membership. 11. Have students develop a plan for achieving their next active degree.	1, 2, 3, 6

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
VI. FFA Chapter Award Areas A. National Chapter Award B. National Chapter Safety Award C. Food for America D. Cooperative Activities E. Building Our American Communities Award VII. Other Activities A. Forestry Camp B. FFA Camp	12. Invite the FFA chapter officers to talk to the class regarding the importance of leadership. 13. Invite members who have attended the Washington Conference Program and/or Made for Excellence to relate their experiences to the class. 14. Post a calendar or advertisement of FFA leadership opportunities occurring in the near future. 15. Plan for FFA members to participate in leadership conferences. 16. Make plans for students to attend leadership or forestry camp.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 2 UNIT LENGTH: 5-10 hrs. TEACHING UNIT TITLE: Conducting a Business Meeting

COMPETENCY STATEMENT

002. Preside over chapter and committee meetings

003. Perform five parliamentary procedure abilities.

INSTRUCTIONAL OBJECTIVES:

002. 01. List and describe the different committees in the FFA.
    02. Recognize the duties and responsibilities of FFA officers.
    03. Demonstrate the ability to preside over chapter and committee meetings.

003. 01. Define parliamentary procedure.
    02. List five reasons for the use of parliamentary procedure.
    03. Demonstrate the use of at least five parliamentary procedure abilities.
    04. Explain key parliamentary procedure concepts.
    05. Recite a selected officer's part in the FFA Opening and Closing ceremonies.

GENERAL COMMENT:

An opportunity to practice the skills developed in this unit of instruction will occur throughout the year.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. FFA Structural Organization A. Local Level 1. Chapter officers 2. Officer responsibilities 3. Local program of activities B. Federation Level 1. Federation officers 2. Officer responsibilities 3. Federation program of activities C. District Level 1. District officers 2. Officer responsibilities 3. District program of activities D. State Level 1. State officers 2. Officer responsibilities 3. State program of activities E. National Level 1. National officers 2. Officer responsibilities 3. National program of activities II. FFA Committees A. Standing Committees B. Appointed Committees C. Responsibilities of Committee Members	1. Provide each student with access to an Official FFA Manual. 2. Test student on the organizational structure of the FFA. 3. Invite an officer from any level of the organization to speak to members regarding member responsibilities. 4. Take members to FFA Camp, State Leadership School, State FFA Convention, and the National FFA Convention. 5. Encourage qualified FFA members to run for office above the chapter level. 6. Place all FFA members on at least one standing committee. 7. Have members cooperatively prepare a local program of activities. 8. Provide each member with the opportunity to preside at a chapter meeting or in a classroom situation	1, 3, 4, 5, 8

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
III. Introduction to Parliamentary Procedure A. Definition of Parliamentary Procedure B. Purpose of Parliamentary Procedure IV. FFA Ritual and Ceremonies A. Opening and Closing Ceremonies B. Other FFA Ceremonies V. Methods of Voting A. Standing B. Voice C. Show of Hands D. Roll Call E. Secret Ballot VI. Demonstrating Abilities A. Main Motions 1. Rules 2. Procedures B. Subsidiary Motions 1. Rules 2. Procedures C. Incidental Motions 1. Rules 2. Procedures D. Privileged Motions 1. Rules 2. Procedures	9. Students write a brief essay on the importance of parliamentary procedure. 10. Discuss the scenario of a chapter meeting conducted without using parliamentary procedure. 11. Divide the class into groups of 6 and have students practice FFA ceremonies. 12. Students practice various methods of voting during mock FFA meetings. 13. Divide the class into officer teams of 6 students. Allow each team to conduct a mock meeting, using parliamentary procedure terms and rules 14. Use correct parliamentary procedure in all meetings.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 3 UNIT LENGTH: 2-3 hours TEACHING UNIT TITLE: Leading a Group Discussion

COMPETENCY STATEMENT

004. Lead a group discussion for fifteen minutes.

INSTRUCTIONAL OBJECTIVES:

004.
  01. Define the qualities of a group leader.
  02. Demonstrate the ability to communicate information effectively.
  03. Plan and conduct a group discussion.

GENERAL COMMENT:

Teachers may provide student with an opportunity to lead group discussions at various times during the year. This activity may be incorporated into other units of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Leading Group Discussions A. Qualities of a Discussion Leader 1. Recognition of their abilities 2. Objective and sensitive to needs of others 3. Leads, but does not dominate 4. Open-minded 5. Organizes and plans discussion adequately B. Planning a Group Discussion 1. Arrangement of the group 2. Provisions for recording information 3. Establishing guidelines for discussion C. Conducting the Group Discussion 1. Provide background information 2. Present well-defined question to group 3. Keep the discussion on track 4. Prevent individuals from dominating time 5. Maintain friendly atmosphere and rules for courtesy D. Closing the Discussion 1. Reach consensus 2. Reporting the results	1. Assign discussion topics to students in class. 2. Use small group discussions for student practice. 3. Use appropriate discussion techniques in FFA committee meetings.	3, 6, 7

TEACHING UNIT : 4 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Developing Plans for Supervised Agricultural Experience Programs

COMPETENCY STATEMENT

005. Develop a personal written SAE plan.

INSTRUCTIONAL OBJECTIVES:

005.
01. Explain the purpose of the SAE program.
02. Discuss the opportunities available in SAE programs.
03. Develop a working knowledge of SAE programs.
04. Develop a written plan for SAE activities.

GENERAL COMMENT:

Relevant examples of SAE opportunities available in the local community should be provided for students.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction A. Definition of SAE B. Determining Student Agricultural Interests C. SAE Opportunities Available D. Assistance Available for SAE Programs II. SAE Ownership Programs A. Types of Ownership Programs B. Setting Goals for Individual Ownership Programs III. SAE Placement Programs A. Types of Placement Programs B. Setting Goals for Individual Placement Programs IV. Directed Laboratory SAE Programs A. Opportunities for Directed Lab Experiences B. Setting Goals for Directed Lab Experiences V. Exploratory SAE Programs A. Opportunities Available B. Setting Goals for Exploratory Experiences	1. Have students complete an agricultural interest survey. 2. Assist students in writing a plan to meet their SAE goals. 3. Use the filmstrip "SOE - Bridging the Gap" 4. Conduct field trips to observe quality SAE programs. 5. Use agreement forms in developing SAE plans. 6. Visit students and parents to determine SAE opportunities.	3, 6, 9

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 5 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Maintaining Records for SAE Programs

COMPETENCY STATEMENT

006. Enter income, expenses, and work performed in a record book.

INSTRUCTIONAL OBJECTIVES:

006. 01. Prepare a financial statement.
  02. Make entries of receipts and expenses in an agricultural record book.
  03. Analyze financial records.
  04. Develop an organized recordkeeping system.

GENERAL COMMENT:

Teachers should provide students opportunities to use SAE records throughout the year. References should be made to recordkeeping activities as various production related units are taught.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Terms Associated with Recordkeeping II. Recordkeeping in Ownership Programs A. Receipts and Expenses B. Maintaining Production Records C. Ownership Costs D. Assets and Liabilities E. Maintaining Inventories III. Recordkeeping in Placement Programs A. Wages Earned/Hours Worked B. Taxes, FICA, Insurance C. Non-income Benefits D. Work Schedules	1. Provide students with a record book appropriate for their SAE program. 2. Invite individuals involved in agriculture/agribusiness to discuss the use of records in management with the class. 3. Update SAE record books in class. 4. Use a sample record problem to allow student practice in recording entries in record books. 5. Use one class period each month for updating SAE record books and to report to the class on new accomplishments.	9

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 6 UNIT LENGTH: 2-3 hours TEACHING UNIT TITLE: **The Livestock and Poultry Industry in North Carolina**

COMPETENCY STATEMENT

007. Describe the importance of the livestock and poultry industry in North Carolina.

INSTRUCTIONAL OBJECTIVES:

007. 01. Identify the major classes of livestock and poultry produced in North Carolina.
02. Explain the economic importance of each of the major classes of livestock and poultry produced in North Carolina.
03. Describe the basic trends in the livestock and poultry industry in the community, state, and nation.

GENERAL COMMENT:

This teaching unit should serve as an introduction to the animal science units in the curriculum. The teacher may incorporate the content into teaching units related to each type of livestock or poultry.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Classes of Livestock Produced in North Carolina A. Importance of the Livestock and Poultry Industry 1. Agricultural income received 2. Total production 3. Rank among states 4. Career opportunities B. Advantages and Disadvantages of Livestock and Poultry Production	1. Take a field trip to a livestock operation or show a film relating to some area of the livestock industry. 2. Provide students with information about the size of the livestock and poultry industry in state. 3. Students conduct a survey of kinds and numbers of farm animals in the community. 4. Students prepare a 3-5 minute talk on a specific type of farm animal that they could select for their SAE. 5. Use a brainstorming technique to identify advantages and disadvantages of producing livestock and poultry in your community. 6. Students prepare a report on a career related to the livestock or poultry industry.	N.C. Department of Agriculture Fact Sheet 10,14, 18,

TEACHING UNIT : 7 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Feed Nutrients for Farm Animals

COMPETENCY STATEMENT

008. Describe the functions and sources of the feed nutrients for farm animals.

INSTRUCTIONAL OBJECTIVES:

008. 01. List six major classes of nutrients.
02. Describe the major function of each class of nutrients.
03. Identify three sources of each major nutrient.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Classes and Functions of Nutrients for Farm Animals A. Function of Nutrient Classes in Rations B. Classes and Sources of Nutrients 1. Carbohydrates 2. Fats 3. Proteins 4. Minerals 5. Vitamins 6. Water C. Feed Additives	1. Have students prepare posters listing the classes of nutrients and their functions.	Ag. Extension Publications
	2. Have students bring samples of ingredients required in animal feed and display in the classroom.	10, 16, 17, 18, 25
	3. Have students write a brief report on their observation of a feed mill in the process of mixing feed.	
	4. Have students secure sample tags from feed bags. Study the contents of different feeds as shown on the tags. Note specifically protein and carbohydrates.	
	5. Show slides or pictures of animals with various nutrient deficiencies.	
	6. Conduct an analysis of a ration to determine the types of nutrients available and in what quantity they occur.	
	7. Collect samples of feed additives to show to students.	
	8. Have students prepare reports on the controversy of using growth stimulating hormones in animal feeds.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 8 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Digestive Systems of Farm Animals

COMPETENCY STATEMENT

009. Explain the parts and functions of the digestive system of farm animals.

INSTRUCTIONAL OBJECTIVES:

009. 01. List the major parts of the digestive system for swine, cattle, horses, and poultry.
02. Describe the function of major parts of the digestive system for swine, cattle, horses, and poultry.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Field trips could be incorporated into the learning activities provided for students during this unit.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Parts of the Digestive System A. Simple Stomached Animals B. Ruminants C. Poultry D. Horses	1. Use charts, diagrams, or transparencies for students to learn to label the parts of digestive systems.	10, 16, 17, 18, 25
	2. Obtain digestive tracts from slaughterhouses for student examination.	
II. Functions of Parts of the Digestive System for Various Classes of Farm Animals	3. Use worksheets on functions of the parts of the digestive systems.	
	4. Use computer programs to show digestive systems of various types of livestock and poultry.	

TEACHING UNIT : 9 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Balancing Rations for Livestock and Poultry

COMPETENCY STATEMENT

010. Balance a ration for three different kinds of livestock or poultry.

INSTRUCTIONAL OBJECTIVES:

010. 01. Determine from tables the nutrient requirements of farm animals at various stages of growth, development or production.
  02. Use the appropriate nutrient requirements for farm animals to balance a ration using the Pearson Square method.
  03. Calculate the amount of feeds required to mix a given quantity of a blended feed for a specified ration.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. The teacher may also include field trips or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Determining Nutrient Requirements A. Definition of Terms B. Characteristics of a Good Ration C. Factors to Consider in Determining Nutrient Requirements 1. Type of livestock or poultry 2. Age 3. Uses a. maintenance b. production c. work (horses) II. Methods of Balancing Rations A. Pearson Square B. Computer III. Determining Amount of Ingredients in Mixed Feeds	1. Bring feed samples into class and have students try to identify the contents. 2. Hand out feed tags and have students identify the nutrient content of each feed stuff. 3. Students determine nutrient requirements for various ages and kinds of livestock and poultry from tables. 4. Use Pearson square method to balance a ration for a specific farm animal. 5. Visit a feed mill and observe feed formulation methods. 6. Use examples from the rations balanced by students to determine the amount of each ingredient in a mixed feed. 7. Use a computer program to balance rations for livestock or poultry. 8. Using current market prices, have students develop the most economical ration for different types of livestock.	10, 16, 17, 18, 25

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 10 UNIT LENGTH: 10-20 hours TEACHING UNIT TITLE: Evaluation of Livestock and Poultry

COMPETENCY STATEMENT

011. Select and grade livestock.

012. Select and judge dairy cattle

013. Select and grade poultry and poultry products.

INSTRUCTIONAL OBJECTIVES:

011. 01. Identify the grades of feeder livestock and place livestock in the correct market grade.
02. Identify the grades of "finished" livestock and place market animals in the correct grade.
03. Identify the wholesale cuts of beef cattle, swine, and sheep.
04. Select livestock on the basis of performance records and pedigrees.

012. 01. Select dairy animals on the basis of performance records and pedigrees.
02. Select dairy animals on the basis of physical characteristics (phenotype).

013. 01. Select live birds on the basis of physical characteristics.
02. Evaluate poultry products using established grading procedures.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips for the purpose of evaluation of live animals and/or poultry products.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Grades and Cuts of Swine A. Slaughter Grades 1. List of slaughter grades 2. Factors that determine grades B. Wholesale cuts 1. Identification 2. Percentage of carcass C. Feeder Grades II. Grades and Cuts of Beef A. Slaughter Grades 1. List of slaughter grades 2. Factors that determine grades 3. Yield grade (cutability) B. Wholesale cuts 1. Identification 2. Percentage of carcass C. Feeder cattle grades 1. Determining frame size 2. Determining muscle thickness	1. Use live animals, slides, pictures, or other visuals to identify grades of livestock. 2. Obtain selected cuts of meat of varying grades or quality and ask students to select the one they would purchase. Students should provide reasons for their selections. 3. Arrange for students to visit a local meat processing plant to see differences in quality of wholesale cuts for various grades. 4. Use filmstrips, slides or videos that compare live animal grades with carcass quality. 5. Discuss the relationship between yield grades in beef cattle and sheep with the amount of finish on an animal. 6. Visit a feeder calf or feeder pig sale. 7. Attend a livestock show involving market animals. 8. Participate in the FFA Livestock Judging Contest. 9. Use a computer program as a tutorial for this unit or as an independent student review.	10, 11, 12, 13, 14, 15, 18, 21, 24

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
III. Grades and Cuts of Sheep A. Market Lamb Grades 1. List of market lamb grades 2. Factors that determine grades 3. Determining yield grades B. Wholesale Cuts 1. Identification 2. Percentage of the carcass		
IV. Selection of Breeding Stock (beef, swine, sheep) A. Factors to Consider 1. Reproductive efficiency 2. Performance records and pedigrees 3. Type a. growth b. muscling and finish c. structural correctness d. size and capacity e. reproductive traits f. special characteristics (wool, etc.)	10. Use field trips to livestock producers or shows to practice judging. 11. Use slides, pictures, or visuals for practice judging of livestock. 12. Use sample performance records and pedigrees for student evaluation. 13. Participate in the FFA Livestock Judging Contest. 14. Observe a veterinarian examine an animal for reproductive soundness.	
V. Selection of Dairy Animals A. Using Performance Records and Pedigrees 1. Milk and butterfat production 2. Predicted difference 3. Type scores	15. Use field trips to livestock producers or shows to practice judging.	

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
V. Selection of Dairy Animals (continued) B. Selection Based Upon Type 1. General Appearance 2. Dairy Character 3. Body Capacity 4. Mammary System	16. Use slides, pictures, or videos for practice judging of dairy cattle. 17. Use sample performance records and pedigrees for student evaluation. 18. Participate in the FFA Dairy Judging Contest.	
VI. Selection of Poultry and Poultry Products A. Selection of Live Birds 1. Broiler and breeder selection 2. Layer selection a. Pigmentation b. Capacity c. Handling qualities d. Molt e. Maturity B. Evaluation of Poultry Products 1. Eggs 2. Carcass evaluation 3. Evaluation of processed poultry	19. Bring live birds into the lab for practice judging. 20. Use slides, pictures, or visuals for practice. 21. Obtain samples of poultry products for student evaluation. 22. Participate in the FFA Poultry Judging Contest. 23. Visit a poultry processing plant. 24. Visit an egg grading and packaging facility.	

TEACHING UNIT : 11 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Fitting and Showing Livestock

COMPETENCY STATEMENT

014. Prepare and show animals in a fair or show.

INSTRUCTIONAL OBJECTIVES:

014. 01. List the age and weight classes of beef cattle, swine, and dairy cattle used for shows.
    02. Describe and demonstrate five recommended grooming procedures for show animals.
    03. Develop a feeding program for a show animal.
    04. List three major factors to consider in caring for an animal at a fair or show.
    05. List four rules of the ring for showing animals.
    06. Demonstrate the techniques of showmanship.

GENERAL COMMENT:

Breed associations provide excellent resources for this unit. Supervised agricultural experiences should be incorporated into this unit of instruction. Students with livestock SAE programs should be encourage to exhibit animals in fairs and shows.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Selecting Show Animals A. Potential for Championship B. Age and Weight Classes for Show Animals C. Health Requirements II. Fitting Livestock for Shows A. Beef Cattle 1. Feeding program 2. Handling and training 3. Grooming B. Swine 1. Feeding program 2. Handling and training 3. Grooming C. Dairy Cattle 1. Feeding program 2. Handling and training 3. Grooming D. Sheep 1. Feeding program 2. Handling and training 3. Grooming IV. Showing Livestock A. Equipment B. Arrival and Entries C. Final Preparations D. Show Ring Procedures E. Sales	1. Use visuals (slides, pictures, videotapes, etc.) to compare feeder and slaughter grades of cattle and swine. 2. Secure show and sale catalogues and discuss the rules, including health requirements. 3. Students develop a written plan for fitting a show animal, including all procedures and a timetable. 4. Show slides or videotapes on fitting show animals. 5. Visit a livestock show and sale. 6. Demonstrate fitting and showing procedures. 7. Conduct a class livestock show. 8. Use computer programs as a means of student review on fitting and showing procedures.	10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 24

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 12 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Producing Livestock and Poultry in North Carolina

COMPETENCY STATEMENT

015. Describe the approved production practices for major livestock, poultry, and specialty animals raised in the community

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INSTRUCTIONAL OBJECTIVES:

015. 01. Identify and explain the importance of performing selected livestock production practices.
02. Contrast the methods of feeding and caring for livestock during the summer months and winter months.
03. Perform the following tasks using accepted procedures:
    1. castration
    2. dehorning
    3. injections
    4. docking tails
    5. trimming hooves
    6. animal identification (branding, tattoo, ear notch, etc.)
    7. providing assistance at birth
04. Describe approved practices involved in the production of a specific type of livestock or specialty animal.

GENERAL COMMENT:

Teachers should select specifics classes of animals from major livestock and poultry enterprises in the community. Additional types of livestock and poultry should be included in the Agricultural Production and Management II curriculum.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Care of Replacement Animals Prior to Breeding A. Feeding B. Determining Age to Breed C. Vaccinations II. Care of Livestock during Gestation A. Feeding B. Housing Requirements III. Management of Livestock from Birth to Weaning A. Care of the Female at Birth 1. Providing assistance 2. Feeding for milk production 3. Preventing diseases and parasites B. Care of Offspring - Birth to Weaning 1. Increasing survival rates at birth 2. Providing supplemental feed 3. Performing production practices* a. Castration b. Docking tails c. Clipping teeth d. Vaccination e. Identification methods f. Growth stimulants g. Preventing parasites 4. Keeping production records	1. Discuss production practices followed by students with livestock SAE programs. 2. Invite a local veterinarian to speak to the class on preventing livestock diseases. 3. Visit a livestock operation to observe & discuss production and management practices followed. 4. Provide hands-on practice for students for technical skills involved in the production of farm and specialty animals. 5. Use audio-visual materials to illustrate production practices. 6. Use computer programs as tutorials or for independent student review.	10, 11, 12, 13, 14,15, 16, 17, 18, 19, 20, 22, 23, 24, 25

* Will vary depending upon the type of livestock produced.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
IV. Production Practices from Weaning to Finishing		
A. Feeding		
B. Preventing Diseases and Parasites		
C. Special Facilities and Equipment Required		
D. Records Needed for Management Decisions		
V. Feeding and Management of Poultry		
A. Laying Hens		
B. Broilers		
C. Turkeys		
VI. Controlling Diseases in Poultry		
A. Sanitation Procedures		
B. Major Poultry Diseases		
VII. Marketing Livestock and Poultry Products		
A. Determining market sources		
B. Establishing a price		
C. Market strategies		
1. Contract sales		
2. Hedging		
3. Local markets		
4. Vertical integration		

TEACHING UNIT : 13 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Introduction to Soil Science

COMPETENCY STATEMENT

016. Identify and classify soils according to land capability class.

INSTRUCTIONAL OBJECTIVES:

016. 01. Distinguish capability class and the proper recommended uses for soils in the local community.
02. Distinguish the different types of soil properties in the local community.
03. Explain the five soil forming factors.
04. List the correct land capability classes.
05. Recommend the correct use of the land for agricultural purposes.
06. Recommend proper management practices to use on the farm.
07. Demonstrate proficiency in estimating slope on agricultural lands.
08. Discuss the effects of soil properties on the five urban land uses.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of instruction. Improvement projects at home or school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. The Importance of Soil A. One of the Most Valuable Resources 1. Agricultural crops 2. Storehouse for water and nutrients B. Other Uses 1. Urban development 2. Engineering a. Roadbed material b. Core materials for dams c. Filter beds for waste disposal plants II. What is Soil? A. Definition of Soil B. Soil Formation 1. Parent material 2. Climate 3. Relief of topography 4. Vegetation 5. Time C. Physical Properties of Soils 1. Soil Texture 2. Soil Structure 3. Soil Consistence 4. Slope 5. Drainage 6. Permeability III. N.C. Soils and Their Formation A. Coastal Plains B. Piedmont C. Mountain	1. Teacher arrange to bring in a local resource person to show slides on how soil is used in the construction industry and to discuss job opportunities in the construction field. 2. Have students perform percolation tests to see if their particular land area meets health department requirements. 3. Take a field trip in the community and identify various types of rocks and signs of soil formation in the area. 4. Teacher arrange for appropriate film strip and slide programs to be viewed by the students. 5. Have students view a rock collection and discuss how different rocks affect soil formation. 6. Have students dig ahole in the soil and observe the profile for important characteristics in growing agricultural crops. 7. Have students prepare maps of N.C. showing the three regions (Coastal, Piedmont, Mountain). 8. Take a field trip around the community and observe the various management practices used on agricultural land.	N. C. Land Judging Manual 30, 32, 33

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
IV. Land Capability Classes A. Land Usage B. Land Treatments	9. Visit various sits in the community where soil is being used for urban uses (foundations, septic systems, sanitary landfill).	
V. Management Practices	10. Use a Sand-Tank Groundwater Flow Model to demonstrate to students concepts of groundwater and how the soil is used to purify water.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 14 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Measuring Agricultural Land Areas

COMPETENCY STATEMENT

017. Demonstrate the ability to measure and calculate land areas.

INSTRUCTIONAL OBJECTIVES:

017. 01. Identify basic units of land measurement.
 02. Utilize equipment necessary for land measurement.
 03. Measure land accurately.
 04. Calculate the acreage in a given piece of property.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of instruction. Improvement projects at home or school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Land Measuring A. Determining the Amount of Acreage 1. Acre = 43,560 sq. ft. 2. Acre = 10 sq. chains a. 1 chain = 66 ft. b. 1 chain has 100 links. c. each link is 0.66 ft. 3. Formula for area of rectangle: Area = length x width 4. Formula for area of triangle: Area = 1/2 length x width B. Necessary Equipment 1. Transit 2. Compass 3. Steel tape 4. Chain tape II. Drawing Survey Maps III. Reading Survey Maps	1. Have student locate the school boundary lines and determine the acreage of the school property. 2. Have students to set up a transit or hand level to determine the percent slope. 3. Have students use the compass in working out the bearings of the school property lines. 4. Have students draw to scale a map of the school grounds. 5. Have students determine the number of acres of a pasture or another crop on the home farm. 6. Give students sample problems of land plots using various types of measurements and have students calculate acreage.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 15 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Reading Soil Maps

COMPETENCY STATEMENT

018. Demonstrate the ability to read soil maps and to interpret the terms and symbols on maps.

INSTRUCTIONAL OBJECTIVES:

018. 01. Develop a working knowledge concerning soils series and how they determine soil behavior.
02. Explain how a soil survey can help in planning land use.
03. Determine how a soil survey can be used to help in selecting crops to be grown on agricultural land.
04. Find specific sites on the soil map.
05. Explain how the soil map legend can be used in finding specific sites on the map.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of instruction. The county Soil Conservation Service representative would provide an excellent resource person for this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Soil Maps A. Definitions B. Kinds of Maps 1. Detailed 2. Detailed reconnaissance 3. Generalized 4. Aerial 5. Schematic C. Symbols and Interpretation II. Soil and Land Use A. History of Soil and Land Use B. Soil Descriptions C. Soil Surveys and Land Use Planning III. Land Use Suitability A. Urban B. Forest C. Crop Land D. Recreation E. Wildlife Habitat F. Engineering	1. List 5 ways soil surveys can help solve future problems. 2. Show soil maps to students and have them study them. 3. Invite a soil conservationist to class and explain soil surveys and maps. 4. Have students determine the type of soil on which their home is located according to the map. 5. Make a list of the soil surveys that have names from the county. 6. Make a list of soil series that are not suitable for urban uses. 7. After locating various soil surveys, visit some of the sites and take samples to determine if the survey is accurate.	30, 32, 33

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 16 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Controlling Soil Erosion

COMPETENCY STATEMENT

019. Prepare a plan to control erosion on a given farm.

INSTRUCTIONAL OBJECTIVES:

019. 01. List management practices which control erosion.
  02. Demonstrate the ability to calculate soil loss.
  03. List the advantages of having an erosion control plan on the farm.
  04. Discuss the government legislation concerning erosion control.
  05. Identify three types of soil water and tell which one is used by plants.
  06. Describe the four factors affecting the water holding capacity of soils.
  07. Recommend methods in conserving water.
  08. Recommend methods in conserving soil from wind erosion.

GENERAL COMMENT:

Improvement projects at home or at school may be used to provide additonal learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Types of Water Associated with the Soil A. Gravitational Water B. Capillary C. Hygroscopic II. Soil Moisture Constant and Water Requirement of Crops A. Constant 1. Soil saturation 2. Field capacity 3. Wilting point or percentage 4. Hydroscopic percentage 5. Oven dryness B. Water Requirements of Crops 1. Transpiration ratio (300 - 800 lbs. of water per pound of dry matter produced) 2. Soil moisture calculation (% soil moisture = wt. of soil moisture/ dry soil weight C. Factors Affecting Water Holding Capacity 1. Texture 2. Soil structure 3. Soil consistence a. kaolinite clay b. montmorillonite 4. Organic matter D. Conserving Soil Water 1. Weeds 2. Mulch 3. Proper drainage 4. No-tilll	1. Have students demonstrate the kinds of soil water by taking samples of soil, weighing it, and dry it an oven. 2. Have students determine water requirements of different crops by growing plants in containers and measuring amounts of water required for each plant. 3. Have students complete soil moisture calculations 4. Have students observe different areas of school grounds that drain poorly and suggest ways of correcting the drainage problems. 5. Have students demonstrate different water holding capacities of soil by adding sand and organic matter to the soil. 6. Have students visit farms in their community that are using no-till practices. 7. Have students calculate soil loss under varying conditions. 8. Take students on a field trip to observe the different types of soil management practices being used. 9. Invite the local SCS person to discuss soil erosion and/or government legislation concerning soil erosion.	30, 32, 33

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
III. Universal Soil Loss Equation A = KRLSCP IV. Soil Erosion Management Practices A. Farm Erosion Control 1. Cover Crop 2. Crop Rotation 3. Strip Cropping 4. Grassed Waterways 5. Conservation Tillage 6. Contour Farming 7. Terraces 8. Windbreaks 9. Shelterbelts B. Nonfarm Erosion 1. Diversion Ditches or Berms 2. Waterways 3. Sediment Basins 4. Bank Protection 5. Terracing 6. Downstream Runoff 7. Vegetative Erosion Control a. Lawns b. Mulching c. Ground covers d. Temporary cover crops V. Soil Erosion Plans VI. Federal Legislation Concerning Erosion Control A. Sodbuster Plan B. Swampbuster Plan	10. Take a field trip to a highway construction site or building site to observe the types of methods being used to control erosion. 11. Using an aerial map of a student's farm, develop a soil erosion plan for the farm.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 17 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Essential Plant Nutrients

COMPETENCY STATEMENT

020. Identify the essential nutrients required for production of farm crops.

INSTRUCTIONAL OBJECTIVES:

020. 01. Describe the characteristics of the 16 essential plant nutrients.
02. Explain the principles of pH.
03. Determine the proper pH for crops.
04. Determine optimum conditions for growing specific crops.
05. Calculate the units of primary nutrients needed per acre on agricultural crops.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Nutrients and Their Functions in Plant Growth A. Major Nutrients 1. Primary elements and their functions a. Nitrogen b. Phosphorus c. Potassium 2. Secondary elements a. Calcium b. Magnesium c. Sulfur 3. Air and Water as Nutrients a. Carbon b. Hydrogen c. Oxygen B. Minor Nutrients and Their Functions 1. Manganese 2. Boron 3. Copper 4. Zinc 5. Iron 6. Molybdenum 7. Chlorine II. Sources of Nutrients A. Sources of Phosphate B. Sources of Nitrogen C. Sources of Potassium	1. Take students on a field trip to the local fertilizer dealer to observe plant foods that supply the nutrients. 2. Conduct field trips for students to observe crops being grown under different cultural practices. 3. Have students write to fertilizer companies and manufacturers for information on the use, manufacture, and function of fertilizer. 4. Have students develop land laboratory experimental plots to show how fertilizer deficiencies affect plants. 5. Arrange for a representative from a fertilizer company to speak to the class. 6. Have students bring empty fertilizer bags to class 7. Invite a local farmer to discuss his/her fertilizer utilization. 8. Have students calculate the number of pounds of the various elements in fertilizer grades. 9. Have students collect nutrient sources, bring them to class, and evaluate their physical characteristics.	27, 28, 29, 31, 32 Ag. Extension Bulletins

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
III. Soil pH A. pH scale B. Characteristics of acid soils C. Characteristics of basic soils D. Effects of pH on crops E. Fertilizer tie-ups due to pH F. Adjusting soil pH	10. Collect samples of hog lagoon waste, cow manure chicken litter and other waste and have them analyzed. 11. Conduct a litmus test on several products to show students the variance of pH. 12. Take a soil sample report to a fertilizer dealer and let students see how the blend is mixed and which sources of nutrients are used. 13. Calculate the nutrient requirements for the 5 most important crops grown in the area.	
IV. Nutrient Requirements of Crops A. Tobacco B. Corn C. Soybeans D. Small Grain E. Peanuts F. Truck Crops G. Sweet Potatoes H. Grasses or Pasture		

TEACHING UNIT : 18 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Nutrient Deficiencies of Crops

COMPETENCY STATEMENT

021. Identify major plant nutrient deficiencies and list methods to correct those deficiencies.

INSTRUCTIONAL OBJECTIVES:

021. 01. Identify primary plant nutrient deficiencies.
    02. Identify secondary plant nutrient deficiencies.
    03. Identify micronutrient plant deficiencies.
    04. Identify major deficiencies in major N.C. crops.
    05. Recommend procedures to correct nutritional deficiencies.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of instruction. Improvement projects at home or at school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Elements Essential to Plants A. Primary B. Secondary C. Micronutrients II. Plant Nutrient Deficiency Symptoms A. Primary B. Secondary C. Micronutrients III. Soil Testing A. When to Collect Samples B. Collecting Soil Samples C. Providing Information for Soil Analysis IV. Fundamentals of Fertilizer Application A. Methods of Application B. Soil Injection C. Crop Management D. Leaching	1. List the 16 essential elements. 2. Show a fertilizer bag and explain contents to the class. 3. Take a field trip to let students see deficiencies in real-life situations. 4. Show slides which depict major deficiencies. 5. Take soil samples in a potentially deficient crop and analyze the results. 6. Make sure students use correct fertilizers on their SAE projects. 7. Visit a fertilizer plant. 8. Take soil samples on a local farm and determine plant needs. 9. Calculate mineral loss due to leaching on various types of local soils.	27, 28, 29, 30, 31, 32

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 19 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Using Soil Test Results

COMPETENCY STATEMENT

022. Interpret a soil sample report for a given crop.

INSTRUCTIONAL OBJECTIVES:

022. 01. Explain and discuss the procedures for collecting soil samples.
     02. Take a good soil sample, package it, complete the information sheet, and send it to the soil testing service.
     03. Interpret soil test results from the soil testing laboratory.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of Instruction. Improvement porjects at home or at school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Purposes for Taking Soil Samples & Tools Used A. Purposes 1. Guide for liming 2. Guide for fertilization 3. Diagnosing soil problems B. Sampling Tools 1. Soil tube 2. Soil auger 3. Flat auger 4. Trowel 5. Shovel 6. Clean bucket II. Procedure for Collecting a Soil Sample A. Representative Sample B. Areas to Sample C. When to Sample III. Filling Out Information Sheet A. Crops to be Planted B. Past Cropping and Fertilization IV. Interpreting Soil Test Results A. Percent Organic Matter B. Weight/Volume C. Cation Exchange Capacity D. Soil Acidity E. Base Saturation F. Nutrient Indices	1. Have students give a three minute speech on the purposes of taking soil samples. 2. Have students identify the soil sampling tools. 3. Have students view filmstrips or slides which explain the correct procedures used to collect soil samples. 4. Provide students with extension pamphlets on soil samples. 5. Give each student a certain area to sample soil and have them demonstrate the proper method of collecting the sample. 6. Take students on a field trip to the soil testing lab to see how soil samples are analyzed. 7. Demonstrate to students the proper way to complete a soil sample information sheet. 8. Have students Interpret recommendations received from the State Soil Testing Service. 9. Have students calculate the amount of plant food requirements from a given test report.	Ag Extension Bulletins 30, 31, 32

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
V. Suggested Treatment VI. Other Tests A. Nematode Assay B. Plant Tissue Analysis C. Animal Waste Test	10. Collect a waste sample from an animal facility, send it to the testing service, and discuss with students the report. 11. Take an injured or infected plant from the greenhouse or field, send it off for a plant analysis test and discuss the results with the class. 12. Contact the extension service to determine an area infested with nematodes and take a nematode assay and discuss the report and how the area can be treated. 13. Take a soil sample report to the local fertilizer dealer and let them show students how they compute and mix fertilizers to meet the specifications on the report.	

TEACHING UNIT : 20 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Controlling Weeds in Agricultural Crops

COMPETENCY STATEMENT

023. Identify weeds and list methods of weed control.

INSTRUCTIONAL OBJECTIVES:

023. 01. Identify weeds according to their life cycles.
  02. Identify 10 common weeds found in the community.
  03. Identify weeds which grow in the area and are harmful to livestock.
  04. Describe four methods of applying herbicides and recommend the correct method for a given situation.
  05. Describe the steps used to calculate the correct amount of herbicide to use per acre.
  06. Demonstrate proficiency in scouting a crop for weed problems.
  07. List management techniques which can be used to control weeds.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of instruction. Improvement projects at hoem or at school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Weed Identification and Control A Classification of Weeds 1. Definition 2. Annuals a. Definition b. Types (summer, winter) 3. Biennials a. Definition b. Types 4. Perennials a. Definition b. Types 5. Weeds toxic to animals B. Weed Control 1. Definition 2. Cultural practices a. Cultivation b. Mowing c. Crop rotation d. Crop competition e. Mulching 3. Chemical Practices a. Contact herbicides b. Growth regulators c. Soil sterilants II. Application of Herbicides A Methods of Application 1. Band method 2. Broadcast method 3. Direct spray method	1. Have students make a list of the names of the common weeds found in the community. 2. Have students bring to class specimens of weeds to be identified. 3. Have students make a display of a collection of the common weeds found in the area. 4. Take a field trip to cropland out of production and identify weeds. 5. Have students prepare a list of methods of controlling weeds. The methods should be specific and listed in two groups: cultural and chemical. By each method list the names of weeds that it will control. For example, under chemical list specific herbicides and the weeds controlled, such as 2,4-D = cocklebur. 6. Have students bring to class empty herbicide containers. Study the labels on the containers to determine the kinds of weeds controlled and the rate of application. 7. Select a small area of the school grounds or nearby farm and apply herbicides to control weeds that are present. Have students regularly observe the area and determine if the herbicide was effective. Also, note the characteristics of the leaves two to five days after treatment.	Ag Extension Bulletins 27, 28, 29, 34, 35

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
B. Application Time in Relation to Method 1. Preplant application 2. Preemergence 3. Postemergence	8. Have students plan a weed control program for the production of one crop. This plan should include method of control, method of application, and time of application.	
C. Safety Precautions 1. Following OSHA regulations 2. Using chemicals in N.C. Pesticide Manual 3. Reading labels and following directions	9. Have students initiate a weed control program for their own home lawn or field crop.	

TEACHING UNIT : 21 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Using Agricultural Tools and Equipment Safely

COMPETENCY STATEMENT

024. Follow safety rules while using tools, machinery, and equipment.

INSTRUCTIONAL OBJECTIVES:

024. 01. List safety rules for each power tool to be used in the agriculture department shop.
    02. Demonstrate proper safety procedures for operating tractors.
    03. Describe and demonstrate proper safety procedures for using lawn mowers and chain saws.
    04. List safety rules for using 10 hand tools.

GENERAL COMMENT:

Supervised agricultural experience programs should be an important part of this unit of instruction. Improvement projects at home or at school may be used to provide additional learning experiences for this competency. Teachers may choose to teach sections of the content related to this competency as a single unit or incorporate the content into other units of instruction throughout the year.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Safety Rules and Procedures A. Identifying Hazards B. Creating Safe Work Habits C. General Shop Safety Rules II. Using Portable Power Tools Safely* A. Circular Saws B. Bayonet Saws C. Hack Saws D. Portable Grinders E. Electric Sanders F. Electric Drills G. Pneumatic Tools III. Using Stationary Equipment Safely* A. Table Saw B. Band Saw C. Radial Arm Saw D. Abrasive Saws E. Power Hack Saw F. Metal Band Saw G. Drill Press H. Planer I. Jointer J. Bench or Pedestal Grinder IV. Using Agricultural Machinery Safely* A. Tractors B. Rotary Tillers C. Lawn Mowers D. Other Equipment	1. Require observance of ALL safety rules as the students work with this unit of instruction. 2. Make a list of safety rules to be observed with each type of equipment or power tool. 3. Demonstrate safe operating procedures for each type of tool, equipment, or machinery. 4. Have students demonstrate safe operating procedures before being allowed to use equipment 5. Administer written safety tests for each type of tools, equipment, or machinery. 6. Use visual aids to show parts and safe use of tools, equipment, and machinery. 7. Use microcomputer tutorials on equipment safety for student drill-and-practice activities. 8. Ask students to idenify shop safety hazards prior to working in the shop.	37, 38, 39, 56, 60, 63 Safety Units Available from Curriculum Materials Centers

*Select equipment available in the department.

TEACHING UNIT : 22 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Cutting Metal

COMPETENCY STATEMENT

025. Demonstrate two methods of cutting metal.

INSTRUCTIONAL OBJECTIVES:

025. 01. Demonstrate procedures used to cut hot and cold metal.
02. Accurately cut metal using metal cutting tools.
03. Accurately measure and mark metal for cutting.

GENERAL COMMENT:

Improvement projects conducted by students at home or at school could serve to provide additional learning experiences related to this competency. Students may also receive additional experience in cutting metal as the complete other units of instruction which require skills in this area.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Safety Rules and Practices A. Importance B. List of Rules II. Cutting Metal A. Hot metal 1. Tools used 2. Advantages 3. Procedures B. Cold Metal 1. Tools used 2. Advantages 3. Procedures	1. Require safety rules to be followed at all times. 2. Make a list of all safety rules to follow while cutting metal. 3. Require each student to demonstrate two methods of cutting metal. 4. Present students with problems related to cutting different types of metals and ask them to determine the most appropriate cutting methods.	37, 38, 39, 46, 47

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 23 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: **Welding With Arc and Oxyacetylene Equipment**

COMPETENCY STATEMENT

026. Make bead, groove, and fillet welds in the flat position.

INSTRUCTIONAL OBJECTIVES:

026. 01. List and explain safety precautions to follow when operating common types of welding equipment.
    02. Explain the processes involved in welding metals.
    03. Identify three common ways to join metal.
    04. Produce quality bead, groove, and fillet welds in the flat position.

GENERAL COMMENT:

Improvement projects conducted by students at home or at school could serve to provide additional learning experiences related to this competency. Teacher should include types of welders available in the local agricultural education program in this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Importance of Welding/Welding Careers II. Safety Precautions* A. Electric Arc Welding B. Oxyacetylene Welding C. Other Welding Equipment 1. TIG 2. MIG 3. Submerged Arc III. Welding Equipment and Supplies A. Selection of Equipment 1. Factors 2. Recommended uses B. Selection of Electrodes and Welding Rods 1. Size 2. Type - AWS Classification IV. Producing Welds A. Bead B. Groove C. Fillet V. Evaluating Quality of Welds A. Appearance B. Penetration (strength) *Note: Teachers should include equipment found in the agriculture department and/or local community.	1. Students will describe potential accidents involving the use of welding equipment. 2. Use safety charts/posters to remind students of safety practices. 3. Allow students to weld using differenty types of electrodes and observe the differences. 4. Provide for student practice in producing welds. 5. Conduct a class welding contest involving all three types of welds. 6. Participate in the FFA Agricultural Mechanics Contest. 7. Use videotapes on welding to illustrate welding practices and procedures. 8. Use computer programs as tutorials on welding procedures. 9. Identify the different types of welds on a welding project.	37, 38, 39, 46, 47, 62 Lincoln Arc Welding Foundation Materials

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 24 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Sharpening Tools

COMPETENCY STATEMENT

027. Demonstrate the ability to sharpen tools.

INSTRUCTIONAL OBJECTIVES:

027. 01. List and describe reasons for keeping tools in good operating condition.
  02. Demonstrate the proper method of sharpening common tools found in agricultural shops.

GENERAL COMMENT:

Improvement projects conducted by students at home or at school could serve to provide additional learning experiences related to this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Reasons for Sharpening Hand Tools II. Safety Practices for Sharpening Tools III. Sharpening Hand Tools A. Determining When to Sharpen Tools B. Procedures for Sharpening Tools C. Common Tools to be Sharpened 1. Chisels 2. Drill bits 3. Screwdrivers 4. Axes and hatchets 5. Chain saws	1. Discuss with the class reasons for sharpening tools and keeping them in good condition. 2. Identify safety practices that apply to reconditioning tools. 3. Have students list correct procedures in sharpening selected tools. 4. Demonstrate the correct procedures for sharpening and reconditioning tools. 5. Provide student practice on sharpening tools by using tools in the department or tools from the students' homes that need sharpening.	37, 38, 39, 50

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 25 UNIT LENGTH: 10-20 hours TEACHING UNIT TITLE: Internal Combustion Engines

COMPETENCY STATEMENT

028. Describe the principles of operation of internal combustion engines.

INSTRUCTIONAL OBJECTIVES:

028. 01. Describe the events that take place in each of the four strokes of an internal combustion engine.
02. List and describe the major systems of an internal combustion engine.
03. List 3 major differences between two-cycle and four-cycle engines.

GENERAL COMMENT:

Supervised agricultural experience programs should be an important part of this unit of instruction. Students should receive hands-on instruction on internal combustion engines in order to provide practical application of principles taught within this unit.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Four-Cycle Engines A. Strokes 1. Intake 2. Compression 3. Power 4. Exhaust B. Systems of Internal Combustion Engines 1. Cooling System a. Parts b. Functions 2. Ignition System a. Parts b. Functions 3. Carburetion System a. Parts b. Functions 4. Lubrication System a. Parts b. Functions 5. Exhaust System a. Parts b. Functions II. Two-Cycle Engines A. Strokes B. Differences Between 2- and 4-Cycle Engines	1. Use an engine model and allow students to describe each stroke as the engine rotates through the four cycles of operation. 2. With supervision from the instructor, service and identify the parts of the cooling, ignition, carburetion, exhaust, and lubrication systems. 3. Use visual aids to illustrate parts of internal combustion engines. 4. Use computer programs to identify engine parts and the functions of each part.	40, 42, 49, 51, 52, 58, 63

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 26 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Making Simple Repairs on Farm Machinery

COMPETENCY STATEMENT

029. Make repairs on agricultural machinery and equipment.

INSTRUCTIONAL OBJECTIVES:

029. 01. Repair specific items on disk harrows, plows, cultivators, and mowers.

GENERAL COMMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. Students should receive hands-on instruction involving farm machinery repair in order for the principles taught in this unit to be applied in practical situations.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Advantages of Making Simple Repairs on the Farm II. Identification of Major Items of Repair on Simple Farm Machinery A. Disk Harrows 1. Bearings 2. Blades B. Breaking Plows 1. Shins 2. Heels 3. Shares 4. Wings C. Cultivators 1. Shares 2. Adjustment connection D. Rotary Mowers III. Lubricants and Lubrication A. Forms of Lubricants B. Grades of Oils C. Classes of Greases D. Methods of Application	1. Have students calculate approximate amounts of money saved by repairing equipment on the farm compared to paying someone to make repairs. 2. Students replace sealed bearings and blades in a disk harrow. 3. Replace worn tillage parts on moldboard plow. 4. Replace plow shares and tines on a cultivator. 5. Replace bolts on cultivator depth adjustments. 6. Replace blades on a rotary mower. 7. Have students drain and refill engine oil. 8. Repack gear and ball bearings. 9. Have students lubricate a tractor.	37, 38, 39, 42, 52, 53, 69

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 27 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Operating a Tractor Safely

COMPETENCY STATEMENT

030. Mount equipment on a tractor.

INSTRUCTIONAL OBJECTIVES:

030. 01. Apply the skills needed to attach an implement to a tractor.
02. Make necessary adjustments to implements and operate a tractor with an implement under average farm conditions.
03. Describe the importance of the PTO shield.
04. Install a PTO shield on a tractor.

GENERAL COMMENT:

Additional time may be needed for students to practice this competency in order to meet the stated objectives. Students should receive practical experiences during which they can practice this competency outside of class time as a part of supervised agricultural experience programs.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Identifying Potential Safety Hazards II. Mounting and Adjusting Farm Equipment to the Tractor A. Tractor Mounted B. Wheel Mounted C. PTO Driven III. Installing and Servicing PTO Shields	1. Students will perform operational checks for a tractor using the appropriate service manual. 2. Students will make a list of potential hazards for tractor operation. 3. Provide students with an opportunity to demonstrate the correct procedure to mount one or more of the following implements: a. disk harrow b. moldboard plow c. chisel plow d. cultivator e. row crop planter f. rotary mower g. others 4. Using a tractor and implement, provide students with practice in operating the equipment safely. 5. Demonstrate how to inspect and replace the PTO shield. Allow for student practice. 6. Participate in the FFA Tractor Driving Contest.	42, 51, 56, 69

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 28 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Laying Out Foundations for Agricultural Buildings

COMPETENCY STATEMENT

031. Lay out a foundation for a building using stakes and batter boards.

INSTRUCTIONAL OBJECTIVES:

031. 01. Determine the materials needed to for stakes and batter boards.
    02. Construct stakes and batter boards with appropriate materials.
    03. Survey and stake off foundations with stakes and batter boards.

GENERAL STATEMENT:

Improvement projects at home or at school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Measuring an Area for Installing a Foundation II. Constructing Foundation Corners with Stakes and Batter Boards	1. Students use surveying techniques to measure the foundation area. 2. Place stakes along measured lines where batter boards will be placed. 3. Students will mark and cut lumber as instructed by the teacher. 4. Students mark corners of foundations with stakes and batter boards.	37, 38, 39,

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 29 UNIT LENGTH: 10-25 hours TEACHING UNIT TITLE: Agricultural Project Construction

COMPETENCY STATEMENT

032. Plan and construct an agricultural project from wood and/or metal.

INSTRUCTIONAL OBJECTIVES:

032. 01. Students will be able to draw orthographic and isometric drawings of a proposed project.
02. Develop a bill of materials for a given project and calculate the cost of the project construction.
03. Students will construct a project from a given plan.

GENERAL COMMENT:

Students should use the skills developed in this competency in their supervised agricultural experience programs. Improvement projects may be used to provide additional learning experiences for this competency. Teachers should assist students in selecting projects within their range of ability.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Making Drawings A. Elevation view B. Plan View C. Side View	1. Students will draw projects and include all views according to the teacher's instructions.	37, 38, 39, 41
II. Developing a Bill of Materials	2. Students will prepare a bill of materials for a given project, using units of measurements for each of the materials in the project.	Project Plans Available from Curriculum Materials Centers
III. Constructing the Project A. Following the Project Plan B. Using Proper Tools and Equipment C. Assembling the Project D. Finishing the Project	3. Students will present alternate ways of constructing a project. 4. Construct a wood or metal project in the agricultural mechanics laboratory. 5. Develop a list of potential safety hazards in constructing projects.	

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 30 UNIT LENGTH: 2-3 hours TEACHING UNIT TITLE: Types of Business Organization

COMPETENCY STATEMENT

033. Describe the types of agricultural business organizations.

INSTRUCTIONAL OBJECTIVES:

033. 01. List the four types of agricultural business organizational structures.
02. Describe each type of business organization.
03. List advantages and disadvantages of each type of business organization.

GENERAL STATEMENT:

This teaching unit should serve as an introduction to the agricultural business management units in the curriculum. The teacher should relate this information to the supervised agricultural experience programs and types of agricultural business organizations found in the community.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Types of Agricultural Business Organization A. Sole Proprietorship 1. Structure 2. Advantages/Disadvantages B. Partnership 1. Structure 2. Advantages/Disadvantages C. Corporation 1. Structure 2. Advantages/Disadvantages D. Cooperative 1. Structure 2. Advantages/Disadvantages	1. Students read from the textbook or handouts about business structure. 2. Develop study questions related to each type of business organization. 3. Invite an attorney to explain business organization. 4. Invite an official to explain how cooperatives work.	71, 75

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 31 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Importance of Agricultural Records

COMPETENCY STATEMENT

034. Explain the importance and uses of agricultural business records.

INSTRUCTIONAL OBJECTIVES:

034. 01. List three reasons for keeping records.
  02. Identify the types of records to be kept.
  03. Describe methods of keeping records.

GENERAL COMMENT:

Supervised agricultural experience programs should be included in this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Kinds of Agricultural Records A. Importance of Keeping Records B. Kinds of Records 1. Property 2. Labor 3. Production 4. Efficiency 5. Materials and Supplies 6. Field 7. Tax 8. Miscellaneous II. Methods of Keeping Records A. "Shoe Box" B. Record Books/Ledger Sheets C. Computer D. Others	1. Conduct a field trip to observe a variety of recordkeeping systems. 2. Have each student prepare a projected budget for a SAE program and list the kinds of records to be kept. 3. Have students report on recordkeeping systems observed in agribusinesses. 4. Ask an agribusiness manager to discuss the necessity of records with the class. 5. Have students keep records of the activities that take place in the classroom or laboratory. 6. Have students complete a simple record problem as a practice exercise in recordkeeping. 7. Use computer spreadsheet programs as a method of keeping records. 8. Use FFA proficiency award applications as an exercise in keeping records.	71, 72, 73, 74, 75, 76

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 32 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Agricultural Enterprise Budget Analysis

COMPETENCY STATEMENT

035. Evaluate a budget for an agricultural enterprise.

INSTRUCTIONAL OBJECTIVES:

035. 01. Define a budget.
02. Describe headings or categories used in an enterprise budget.
03. Calculate returns to various inputs such as land, labor, management, or capital.
04. Calculate returns when new values have been substituted for inputs or outputs.

GENERAL COMMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. The teacher should incorporate this unit of instruction at the time SAE records will be summarized.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Budgets A. Definition B. Enterprise Budget Planning C. Total Budget Planning D. Partial Budgets II. Enterprise Budget Analysis A. Categories in Budgets B. Reading the Budget C. Substituting Values D. Calculating Returns to Inputs 1. land 2. labor 3. capital 4. management	1. Prepare handouts with copies of each type of budget for students to identify budget types. 2. Have students calculate returns to various inputs and returns when prices change. 3. Demonstrate computer programs used for enterprise budgets. 4. Assist students in developing a personal budget. 5. Encourage students to participate in the FFA Agricultural Management Contest.	71, 72, 73, 74, 75, 76

AGRICULTURAL PRODUCTION AND MANAGEMENT I **COURSE NO. 6811**

TEACHING UNIT : 33 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Managing Private Woodlands

COMPETENCY STATEMENT

036. List and describe the principles involved in managing private woodlands.

INSTRUCTIONAL OBJECTIVES:

036. 01. Discuss the importance of forestry as an industry to North Carolina.
02. Describe the history of forest management in the United States.
03. List some present problems facing the forestry industry today.
04. List factors which affect woodland management.
05. List and explain three methods of forest regeneration.
06. Demonstrate proficiency in estimating volumes of wood for use as lumber and pulpwood.
07. Identify 10 common trees grown for commercial uses in the community.

GENERAL COMMENT:

Supervised agricultural experience programs may be a part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Importance of Forestry A. Definition of Forestry B. History of Forest Management C. Present Problems in Forestry D. Harvesting Forest Products II. Factors Affecting Woodlot Management A. Access B. Drainage C. Topography III. Regeneration of Forests A. Natural Regeneration B. Artificial Regeneration C. Site Preparation D. Post-planting Treatments IV. Tree Identification V. Measuring the Forest A. Measuring Tree Diameter and Height B. Estimating Timber Volume	1. Invite a local representative of the Forestry Service to speak to the class about forest management. 2. Have the students make a list of everything in their home that comes from the forestry industry 3. Make a list in class of the by-products of wood. 4. Conduct a debate with one team in favor of modern day forest practices and the other in opposition. 5. Select a small woodland plot close to school and show students how important drainage and topography are in forest management. 6. Take a field trip to various tracts of cleared timber and show students the different ways the forests are regenerated. 7. Demonstrate the proper use of a Biltmore stick in measuring trees and estimating timber volume. 8. Invite a representative from a timber company to explain to students how to cruise timber. 9. Let students contact lumber companies and pulpwood plants and obtain current prices for timber. 10. Calculate for students the value of a tract of timber using current prices.	Ag Extension Bulletins 26, 33

TEACHING UNIT : 34 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Managing Wildlife on Private Land

COMPETENCY STATEMENT

037. List and describe principles involved in managing wildlife on private land.

INSTRUCTIONAL OBJECTIVES:

037. 01. List 3 advantages of wildlife.
02. Discuss the habitat requirements for wildlife.
03. Discuss procedures used to manage wildlife.
04. Explain how federal and state legislation has helped or hurt wildlife in North Carolina.

GENERAL COMMENT:

Supervised agricultural experience programs may be an integral part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Value of Wildlife II. Habitat Requirements A. Food B. Cover C. Water D. Home Range and Territory III. Management Procedures A. Game Refuges B. Habitat Development and Improvement C. Coordination with other Resources D. Hunting Regulations E. Predator Control F. Artificial Stocking IV. Individual Landowners and Game Management V. Legislation and Game Management	1. Have students make a list of the different types of wildlife in the community. 2. Have students make a list of the available food to wildlife. 3. Invite the local wildlife biologist to speak to the class on wildlife management. 4. Take students on a field trip to a game refuge to see how wildlife is managed. 5. Invite a wildlife officer to discuss regulations concerning wildlife with the class. 6. Take field trips to farms where wildlife management is practiced to see its effects. 7. Identify farms without wildlife and arrange a visit. After the visit develop a plan that could help manage wildlife on the farm.	33

TEACHING UNIT : 35 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Harvesting Wildlife

COMPETENCY STATEMENT

038. Describe safe practices in harvesting wildlife species.

INSTRUCTIONAL OBJECTIVES:

038. 01. Demonstrate the ability to handle firearms in a safe manner.
 02. Discuss the hunter's responsibilities.
 03. Identify the five actions of firearms and types of handguns.
 04. Describe the history of firearms.
 05. Identify the various types of ammunition and explain their components.
 06. Explain key hunting and fishing laws.
 07. Demonstrate survival and first aid techniques to use if a person is lost or injured.
 08. Explain the signs used to identify wildlife in the field.

GENERAL COMMENT:

Additional practice time may be provided for students in order to gain competency in this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Hunter Responsibility II. Wildlife Conservation and Management III. Firearms A. Rifles B. Shotguns C. Cleaning and Storage D. Ammunition E. Firearm Handling and Safety F. Marksmanship and Shooting Fundamentals IV. Wildlife Identification V. Game Care VI. Specialty Hunting A. Muzzleloading B. Handguns C. Bow Hunting IX. Special Concerns A. Alcohol and Drugs B. Turkey Hunting C. Trapping D. All-Terrain Vehicles E. Hunting Dogs X. Range Work	1. Teach students the N.C. Hunter Education Course sponsored by the N.C. Wildlife Resource Commission. 2. Invite the local wildlife officers to speak to the class on the topics of firearm safety, games laws, types of weapons, and/or hunter responsibility.	N.C. Hunter Safety Manual 33

AGRICULTURAL PRODUCTION AND MANAGEMENT II

Course No. 6812

Units of Instruction

Suggested Unit Lengths

Instructional Objectives

Content Outlines

Suggested Teaching Activities

Resources

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 1 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Opportunities Available in the FFA

COMPETENCY STATEMENT

001. Explain opportunities available to students in the FFA.

INSTRUCTIONAL OBJECTIVES:

001. 01. Provide students with information regarding the FFA Scholarship program.
    02. Promote individual and team activities in the FFA.
    03. Encourage leadership characteristics through FFA participation.

GENERAL COMMENT:

Parts of this unit of instruction may be taught at various times throughout the school year, as FFA opportunities occur on the FFA Calendar of Activities.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction A. FFA Defined 1. Clientele 2. Organization II. FFA Member Awards A. Achievement Awards B. Proficiency Awards C. Star Degree Awards D. Computers in Agriculture E. FFA Scholarship Program III. FFA Contests A. Agricultural Skills B. Leadership Development IV. FFA Degrees A. Types of Membership B. Degree Requirements V. FFA Leadership Programs A. Washington Conference Program B. Made for Excellence C. State and National Programs D. District and/or Federation Programs E. Local Leadership Opportunities	1. Have a state FFA officer visit the chapter to discuss FFA opportunities. 2. Review the aims and purposes of the FFA. 3. Have students read chapter 2 in the FFA Student Handbook. 4. Show the "America, We Are the FFA" Video. 5. Review information in the FFA Proficiency Award Handbook. 6. Have students read chapter 6 in the FFA Student Handbook. 7. Discuss scholarships available to members in North Carolina. 8. Have students read chapter 7 in the FFA Student Handbook. 9. Discuss contest eligibility requirements as set forth in the NC Chapter Guide to FFA Activities. 10. Discuss requirements for degrees of active membership. 11. Have students develop a plan for achieving their next active degree.	1, 2, 3, 6 National FFA Organization Materials N.C. FFA Association Materials

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
VI. FFA Chapter Award Areas A. National Chapter Award B. National Chapter Safety Award C. Food for America D. Cooperative Activities E. Building Our American Communities Award VII. Other Activities A. Forestry Camp B. FFA Camp	12. Invite the FFA chapter officers to talk to the class regarding the importance of leadership. 13. Invite members who have attended the Washington Conference Program and/or Made for Excellence to relate their experiences to the class. 14. Post a calendar or advertisement of FFA leadership opportunities occurring in the near future. 15. Plan for FFA members to participate in leadership conferences. 16. Make plans for students to attend leadership or forestry camp.	

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 2 UNIT LENGTH: 2-3 hours TEACHING UNIT TITLE: The FFA Organization

COMPETENCY STATEMENT

002. Preside over chapter and committee meetings

INSTRUCTIONAL OBJECTIVES:

002. 01. List and describe the different committees in the FFA.
     02. Recognize the duties and responsibilities of FFA officers.
     03. Demonstrate the ability to preside over chapter and committee meetings.

GENERAL STATEMENT:

An opportunity to practice the skills developed in this unit of instruction will occur throughout the year.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. FFA Structural Organization A. Local Level 1. Chapter officers 2. Officer responsibilities 3. Local program of activities B. Federation Level 1. Federation officers 2. Officer responsibilities 3. Federation program of activities C. District Level 1. District officers 2. Officer responsibilities 3. District program of activities D. State Level 1. State officers 2. Officer responsibilities 3. State program of activities E. National Level 1. National officers 2. Officer responsibilities 3. National program of activities II. FFA Committees A. Standing Committees B. Appointed Committees C. Responsibilities of Committee Members	1. Provide each student with access to an Official FFA Manual. 2. Test student on the organizational structure of the FFA. 3. Invite an officer from any level of the organization to speak to members regarding member responsibilities. 4. Take members to FFA Camp, State Leadership School, State FFA Convention, and the National FFA Convention. 5. Encourage qualified FFA members to run for office above the chapter level. 6. Place all FFA members on at least one standing committee. 7. Have members cooperatively prepare a local program of activities. 8. Provide each member with the opportunity to preside at a chapter meeting or in a classroom situation	1, 2, 3, 6

TEACHING UNIT : 3 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Conducting Business Meetings

COMPETENCY STATEMENT

003. Perform ten parliamentary procedure abilities.

INSTRUCTIONAL OBJECTIVES:

003. 01. Define parliamentary procedure.
 02. List five reasons for the use of parliamentary procedure.
 03. Demonstrate the use of at least ten parliamentary procedure abilities.
 04. Develop a working knowledge of key parliamentary procedure concepts.
 05. Recite selected components of the FFA Opening and Closing ceremonies.

GENERAL STATEMENT:

This unit of instruction is especially well suited for a role play teaching technique, which provides for individual student practice in performing the parliamentary procedure abilities.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction to Parliamentary Procedure A. Definition of Parliamentary Procedure B. Purpose of Parliamentary Procedure II. FFA Ritual and Ceremonies A. Opening and Closing Ceremonies B. Other FFA Ceremonies III. Methods of Voting A. Standing B. Voice C. Show of Hands D. Roll Call E. Secret Ballot IV. Demonstrating Abilities A. Main Motions 1. Rules 2. Procedures B. Subsidiary Motions 1. Rules 2. Procedures C. Incidental Motions 1. Rules 2. Procedures D. Privileged Motions 1. Rules 2. Procedures	1. Students write a brief essay on the importance of parliamentary procedure. 2. Discuss the scenario of a chapter meeting conducted without using parliamentary procedure. 3. Divide the class into groups of 6 and have students practice FFA ceremonies. 4. Students practice various methods of voting during mock FFA meetings. 5. Divide the class into officer teams of 6 students. Allow each team to conduct a mock meeting, using parliamentary procedure terms and rules 6. Use correct parliamentary procedure in all meetings.	1, 3, 4, 5, 8

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 4 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Public Speaking

COMPETENCY STATEMENT

004. Prepare and present a five minute speech.

INSTRUCTIONAL OBJECTIVES:

004. 01. Develop public speaking skills.
    02. Demonstrate the ability to communicate information effectively.

GENERAL STATEMENT:

Time required for this activity will vary, depending upon the time allocated for presentation of student speeches. Teachers may choose to incorporate public speaking activities as learning activities in a variety of units throughout this course.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Preparing a Speech A. Researching the Topic B. Preparing the Outline C. Writing the Speech D. Doculing the Sources of Information II. Delivering the Speech A. Stage Appearance 1. Stance and use of gestures 2. Official dress B. Voice 1. Pronounciation 2. Enunciation 3. Volume 4. Clarity 5. Enthusiasm C. Responding to Questions 1. Positive responses 2. Accuracy	1. Have every student prepare a speech. 2. Use tapes of National FFA Convention speakers to teach stage presence and delivery. 3. Use videotapes of State FFA Public Speaking Contests as examples of effective speakers. 4. Organize a chapter public speaking contest and award prizes. 5. Encourage members to attend leadership workshops and to participate in community activities involving public speaking skills. 6. Videotape students as they present speeches for study and self-evaluation.	2, 3, 6, 7

AGRICULTURAL PRODUCTION AND MANAGEMENT II　　COURSE NO. 6812

TEACHING UNIT : 5　　UNIT LENGTH: 3-5 hours　　TEACHING UNIT TITLE: Developing Plans for Supervised Agricultural Experience Programs

COMPETENCY STATEMENT

005. Develop a personal written SAE plan.

INSTRUCTIONAL OBJECTIVES:

005.
  01. Explain the purpose of the SAE program.
  02. Discuss the opportunities available in SAE programs.
  03. Develop a working knowledge of SAE programs.
  04. Develop a written plan for SAE activities.

GENERAL STATEMENT:

Relevant examples of SAE opportunities available in the local community should be provided for students. Teachers should incorporate examples of student SAE programs into this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction A. Definition of SAE B. Determining Student Agricultural Interests C. SAE Opportunities Available D. Assistance Available for SAE Programs II. SAE Ownership Programs A. Types of Ownership Programs B. Setting Goals for Individual Ownership Programs III. SAE Placement Programs A. Types of Placement Programs B. Setting Goals for Individual Placement Programs IV. Directed Laboratory SAE Programs A. Opportunities for Directed Lab Experiences B. Setting Goals for Directed Lab Experiences V. Exploratory SAE Programs A. Opportunities Available B. Setting Goals for Exploratory Experiences	1. Have students complete an agricultural interest survey. 2. Assist students in writing a plan to meet their SAE goals. 3. Use the filmstrip "SOE - Bridging the Gap" 4. Conduct field trips to observe quality SAE programs. 5. Use agreement forms in developing SAE plans. 6. Encourage students to participate in the FFA Proficiency Award Program.	3, 6, 9

TEACHING UNIT : 6 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Maintaining Records for SAE Programs

COMPETENCY STATEMENT

006. Enter income, expenses, and work performed in a record book.

INSTRUCTIONAL OBJECTIVES:

006. 01. Prepare a financial statement.
 02. Make entries of receipts and expenses in an agricultural record book.
 03. Analyze financial records.
 04. Develop an organized recordkeeping system.

GENERAL STATEMENT:

Students should practice the skills developed in this unit of instruction at appropriate times during the year as they complete work on their individual SAE records.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Terms Associated with Recordkeeping II. Recordkeeping in Ownership Programs A. Receipts and Expenses B. Maintaining Production Records C. Ownership Costs D. Assets and Liabilities E. Maintaining Inventories III. Recordkeeping in Placement Programs A. Wages Earned/Hours Worked B. Taxes, FICA, Insurance C. Non-income Benefits D. Work Schedules	1. Provide students with a record book appropriate for their SAE program. 2. Invite individuals involved in agriculture/agribusiness to discuss the use of records in management with the class. 3. Update SAE record books in class. 4. Use a sample record problem to allow student practice in recording entries in record books.	9, 71, 72

TEACHING UNIT : 7 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Equipment and Facilities Used in Livestock and Poultry Production

COMPETENCY STATEMENT

007. Describe the feeding and housing systems commonly used on the farm.

INSTRUCTIONAL OBJECTIVES:

007. 01. Identify types of farm buildings, fences, and equipment needed for the production of farm animals.
 02. Select the most appropriate type of facilities for a given livestock and/or poultry production situation.
 03. Describe two approved methods of waste disposal and select the appropriate method for a given situation..

GENERAL COMMENT:

Teachers should determine which types of livestock and poultry facilities are appropriate for their local situation. Teachers may choose to incorporate the content in this unit of instruction into that related to Competency 012. Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Buildings, Equipment, and Fences for Farm Animals A. Dairy Cattle Production 1. Buildings a. Free stall housing b. Stanchion barns c. Milking parlor d. Calf facilities e. Other buildings 2. Equipment a. Feeding equipment b. Milking equipment c. Watering equipment and facilities d. Other dairy equipment 3. Fences B. Beef Cattle Production 1. Buildings a. Shelter for beef cattle b. Storage buildings (feed and equipment) 2. Equipment a. Feeding equipment b. Livestock handling equipment c. Other beef cattle production equipment 3. Fences (types)	1. Develop a list of types of buildings used in dairy cattle production from a class discussion. 2. Schedule a field trips to observe facilities at various types of farms. 3. Invite building and equipment suppliers to visit the class and discuss facilities. 4. Use videotapes illustrating dairy and beef cattle facilities and equipment. 5. Using current prices, have students calculate costs of constructing livestock and poultry facilities.	10, 11, 12, 13, 16, 18 19, 20 Agricultural Extension Publications

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
C. Swine Production		
1. Buildings and Equipment		
a. Shelters and storage facilities		
b. Farrowing facilities		
c. Finishing and growing facilities		
d. Others		
2. Fences (types)		
D. Sheep Production		
1. Buildings		
2. Equipment		
a. Feeding equipment		
b. Dipping and spraying equipment		
c. Water facilities		
3. Fences (types)		
E. Horse Production		
1. Buildings		
a. Barns		
b. Storage sheds		
2. Equipment		
a. Feeders		
b. Watering systems		
3. Fences for horses		
F. Poultry Production		
1. Buildings and Equipment		
a. Brooding houses		
b. Laying houses		
c. Broiler houses		
d. Range houses		

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
II. Methods of Waste Disposal		
A. Importance of Proper Disposal of Waste		
B. Economic Value of Barnyard Manure 1. Organic matter 2. Plant nutrients		
C. Lagoons		
D. Storage and Handling of Waste		

TEACHING UNIT : 8 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Breeding and Management of Livestock and Poultry

COMPETENCY STATEMENT

008. Explain the parts and the functions of the reproductive systems of livestock and poultry.

009. Describe the breeding and management systems commonly used in livestock and poultry production.

INSTRUCTIONAL OBJECTIVES:

008. 01. Identify the male and female reproductive organs of livestock and poultry.
    02. Explain the function of the reproductive organs of livestock and poultry.
    03. Explain how genetic characteristics are transmitted.

009. 01. Describe the growth patterns and maturity ages of breeding animals.
    02. Identify and describe three methods of breeding farm animals.
    03. Identify and describe the major systems of livestock breeding.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips and/or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Reproductive Systems A. Age and Sexual Maturity B. Reproductive Organs and Their Functions 1. Female reproductive organs a. primary organs b. secondary organs 2. Male reproductive organs a. primary organs b. secondary organs c. accessory organs C. Transmission of Genetic Traits 1. Definition of terms 2. Principles of meiosis 3. Heritability levels of production traits 4. Sex-linked characteristics 5. Determining probable characteristics of offspring with known genotypes II. Methods of Breeding Farm Animals A. Natural Mating B. Artificial Insemination 1. Definition 2. Equipment and Procedures	1. Use visual aids to identify the parts of the male and female reproductive tracts and explain the function of each part. 2. Obtain reproductive tracts from slaughterhouses to use in identification of reproductive organs. 3. Use information sheets on basic genetics to explain basic principles. 4. Compare the effects of heritability and environment on improvement of farm animals. 5. Have students complete probability charts using common combinations of dominant and recessive traits found in farm animals. 6. Use computer programs as a tutorial or for independent student review of information. 7. Invite an A.I. technician to demonstrate artificial insemination techniques. 8. Take a field trip to livestock or poultry operations using various methods of breeding and ask each to explain the advantages and disadvantages.	10, 14, 15, 16 22

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
II. Methods of Breeding Farm Animals (continued)	9. Observe embryo transfer procedures on a field trip	
C. Embryo Transfer 1. Advantages 2. Procedures	10. Use audio-visual aids to show various methods of breeding.	
III. Gestation Periods and Estrus Cycles	11. Have students determine from charts the gestation periods of various types of livestock.	
A. Gestation 1. Definition 2. Length for various types of livestock 3. Hormones affecting gestation	12. Assign student reports on the effects of hormones on the reproductive cycles of livestock and poultry	
B. Estrus Cycles 1. Definition 2. Length of Cycle 3. Length of Estrus a. Timing of breeding b. Number of matings	13. Have a resource person visit the class and explain the systems of breeding giving examples of each. 14. Take students on a field trip to determine the breeding systems practiced locally.	
IV. Systems of Breeding	15. Assign students an oral or written report on the advantages and disadvantages of different systems of breeding.	
A. Upgrading B. Purebred Breeding C. Crossbreeding D. Inbreeding E. Line breeding F. Cross-line Breeding G. Rotation Breeding	16. Have students develop a breeding system for a given livestock production situation.	

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 9 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Diseases and Parasites of Farm Animals

COMPETENCY STATEMENT

010. List methods of prevention and treatment of parasites of farm animals.

011. Describe the common diseases and treatment of diseases of farm animals.

INSTRUCTIONAL OBJECTIVES:

010. 01. Identify three external and three internal parasites for each type of livestock and poultry produced in the community.
  02. Describe three methods of preventing parasites.
  03. Explain the economic losses due to parasite infestations.
  04. List methods of treating animals with parasite infestations.

011. 01. Discuss economic losses from diseases.
  02. Describe methods of preventing diseases of farm animals.
  03. Identify common diseases of farm animals from observed symptoms.
  04. List treatments of common diseases that can be administered by the livestock or poultry producer.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips and/or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Controlling Losses from Parasites A. Economic Losses from Parasites 1. Mortality 2. Loss of production efficiency 3. Cost of treatment 4. Condemnation by inspectors B. Prevention of Parasite Infestations 1. Sanitation 2. Isolation 3. Chemical 4. Biological C. Treating Parasite Infestations 1. Identification a. External b. Internal 2. Treatment (for each parasite identified)	1. Secure specimen of parasites for student observation. 2. Use slides or pictures to show examples of parasite damage to animal products. 3. Invite an animal science specialist to speak to the class on controlling parasites. 4. Students design a program for the prevention of parasites for a specific livestock or poultry enterprise. 5. Use films and/or videotapes on the topic of preventing or controlling livestock and poultry diseases.	10, 14, 15, 16, 18, 23, 24

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
II. Controlling Losses from Diseases A. Economic Losses from Diseases 1. Mortality 2. Loss of production efficiency 3. Cost of treatment 4. Condemnation by inspectors B. Prevention of Diseases 1. Sanitation 2. Immunity 3. Vaccination C. Treating Diseases of Farm Animals* 1. Diagnosis a. Symptoms b. Medical tests 2. Treatment (for each disease identified)	1. Students should list and classify the common diseases of livestock and poultry raised in the . community. 2. Use slides or pictures to show symptoms of diseases. 3. Invite a local veterinarian to speak to the class on preventing diseases. 4. Students design a program for the prevention of diseases in a specific livestock or poultry operation. 5. Invite local producers to speak to the class on sanitation programs designed to prevent diseases of farm animals. 6. Use videotapes on various livestock and poultry diseases. 7. Use computer programs as a tutorial or for independent student review.	

*Teachers should select diseases appropriate for types of livestock and poultry raised in the community.

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 10 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Producing Livestock and Poultry in North Carolina

COMPETENCY STATEMENT

012. Describe the approved production practices for major livestock, poultry, and specialty animals raised in the community

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INSTRUCTIONAL OBJECTIVES:

012. 01. Identify and explain the importance of performing selected livestock production practices.
02. Contrast the methods of feeding and caring for livestock during the summer months and winter months.
03. Perform the following tasks using accepted procedures:
    1. castration
    2. dehorning
    3. injections
    4. docking tails
    5. trimming hooves
    6. animal identification (branding, tattoo, ear notch, etc.)
    7. providing assistance at birth
04. Describe approved practices involved in the production of a specific type of livestock or specialty animal.

GENERAL COMMENT:

Teachers should select specific classes of animals from major livestock and poultry enterprises in the community in addition to types of livestock and poultry included in a similar unit of instruction in the Agricultural Production and Management I curriculum.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Care of Replacement Animals Prior to Breeding A. Feeding B. Determining Age to Breed C. Vaccinations II. Care of Livestock during Gestation A. Feeding B. Housing Requirements III. Management of Livestock from Birth to Weaning A. Care of the Female at Birth 1. Providing assistance 2. Feeding for milk production 3. Preventing diseases and parasites B. Care of Offspring - Birth to Weaning 1. Increasing survival rates at birth 2. Providing supplemental feed 3. Performing production practices* a. Castration b. Docking tails c. Clipping teeth d. Vaccination e. Identification methods f. Growth stimulants g. Preventing parasites 4. Keeping production records	1. Discuss production practices followed by students with livestock SAE programs. 2. Invite a local veterinarian to speak to the class on preventing livestock diseases. 3. Visit a livestock operation to observe & discuss production and management practices followed. 4. Provide hands-on practice for students for technical skills involved in the production of farm and specialty animals. 5. Use audio-visual materials to illustrate production practices. 6. Use computer programs as tutorials or for independent student review.	10, 11, 12, 13, 14,15, 16, 17, 18, 19, 20, 22, 23, 24, 25

* Will vary depending upon the type of livestock produced.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
IV. Production Practices from Weaning to Finishing A. Feeding B. Preventing Diseases and Parasites C. Special Facilities and Equipment Required D. Records Needed for Management Decisions V. Feeding and Management of Poultry A. Laying Hens B. Broilers C. Turkeys VI. Controlling Diseases in Poultry A. Sanitation Procedures B. Major Poultry Diseases VII. Marketing Livestock and Poultry Products A. Determining market sources B. Establishing a price C. Market strategies 1. Contract sales 2. Hedging 3. Local markets 4. Vertical integration		

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 11 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Government Regulations Related to Livestock and Poultry Production

COMPETENCY STATEMENT

013. Explain government regulations pertaining to livestock and poultry production in North Carolina.

INSTRUCTIONAL OBJECTIVES:

013. 01. Explain reasons for establishing quarantines for livestock and poultry operations.
     02. Describe regulations involving shipping of farm animals.
     03. List procedures for properly disposing of an animal carcass.

GENERAL STATEMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Quarantines as a Method of Disease Prevention A. Reasons for Establishing Quarantines B. Regulations Related to Quarantines II. Regulations Regarding Shipping of Farm Animals A. Shipping Notices 1. Purpose 2. Information required 3. Laws and fines B. Certificates of Health 1. Purpose 2. Types 3. Laws and fines III. Disposal of Animal Carcasses A. Laws Governing Disposal of Carcasses B. Methods of Disposing of Animal Carcasses 1. Burying 2. Burning 3. Sale to rendering company	1. Invite a local veterinarian to discuss regulations related to quarantine of farm animals. 2. Discuss with the class potential effects of spread of communicable diseases among livestock. 3. Obtain copies of laws and penalties related to shipment of livestock. 4. Students complete shipping notices. 5. Obtain copies of health certificates to show to class. 6. Discuss local and state laws related to carcass disposal. 7. Ask students to share experiences related to disposal of carcasses. 8. Provide students with specific situations related to the death of a farm animal and ask them to select the most appropriate method of disposing of the carcass.	14, 16 Agricultural Extension Publications

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 12 UNIT LENGTH: 5-8 hours TEACHING UNIT TITLE: Controlling Insects in Crops

COMPETENCY STATEMENT

014. Identify common crop insects and their effects on crops in the local community.

INSTRUCTIONAL OBJECTIVES:

014. 01. Identify various insects as they occur in field crops.
    02. Describe signs and symptoms of insect damage to field crops.
    03. Determine the correct general method of insect control.

GENERAL STATEMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips and/or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Insect Identification A. Physical Characteristics 1. Head and mouthparts 2. Thorax, legs, and wings 3. Abdomen B. Insect Development - Metamorphosis C. Insect-like Pests 1. Arachnids 2. Crustaceans 3. Centipedes/millipedes II. Crop Damage by Insects A. Quality Reduction B. Quantity Reduction III. Integrated Pest Management A. Host Resistance 1. Threshold levels 2. Genetic engineering B. Biological Control 1. Predators and parasites 2. Pathogens 3. Sterile males 4. Pheromones 5. Juvenile hormones	1. Have students collect and identify various insects found in local crops. 2. Students use worksheets to label major parts of an insect. 3. Students make drawings of the different metamorphic life cycles. 4. Students write a brief paper on the differences between insects and insect-like pests. 5. Use class discussion to discover student awareness of the various methods of biological, cultural, and mechanical control of insects used in the community. 6. Discuss various methods of sanitation and chemical methods used to control insects. 7. Use visual aids (slides, pictures, charts, filmstrips, etc.) to identify insect pests. 8. Invite an extension agent to discuss scouting crops for insect damage. 9. Take a field trip to observe a growing crop and demonstrate how to scout for insects.	27, 28, 29, 34 Agricultural Extension Publications

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
C. Cultural Control		
1. Crop rotation		
2. Trap crops		
3. Planting dates		
4. Harvest timing		
D. Mechanical Control		
1. Screens and barriers		
2. Traps		
3. Light		
4. Temperature		
5. Radiation and/or electrocution		
E. Sanitation		
1. Cultivation		
2. Burning crop residues		
3. Destroying litter and trash		
F. Chemical Control		
1. Repellents		
2. Poisons		
IV. Scouting Procedures		
A. Determining Threshold Levels		
B. Procedures and Practices in Scouting Insects		

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 13 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Controlling Diseases in Field Crops

COMPETENCY STATEMENT

015. Describe common plant diseases and symptoms of damage to crops grown in the community.

016. Describe at least four methods of controlling major plant diseases.

INSTRUCTIONAL OBJECTIVES:

015. 01. Identify various diseases as they occur in field crops.
  02. Describe symptoms of disease damage to field crops.

016. 01. List a minimum of four methods of plant disease control.
  02. Select an appropriate methods of controlling plant diseases in a given situation.

GENERAL STATEMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips and/or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Plant Disease Agents A. Pathogens 1. Fungi 2. Bacteria 3. Viruses and mycoplasmas 4. Nematodes B. Plant Response to Pathogens 1. Overdevelopment of tissue 2. Underdevelopment of tissue 3. Necrosis	1. Conduct a field trip to a farm to identify any crop diseases present. 2. Have students write a brief essay on the four types of disease pathogens. 3. Use slides of diseases of field crops to use in class discussions and reviews of major field crop diseases.	27, 28, 29, 34 Agricultural Extension Publications
II. Diagnosis of Plant Disease - Symptoms	4. Use small groups to develop a list of diseases that affect greenhouse crops, stored crops, or field crops.	
III. Controlling Plant Disease A. Greenhouse Disease Control 1. Host resistance 2. Mechanical control 3. Chemical control 4. Sanitation B. Diseases of Stored Crops 1. Host resistance 2. Mechanical control 3. Chemical control 4. Sanitation C. Diseases of Field Crops 1. Host resistance 2. Mechanical control 3. Chemical control 4. Sanitation	5. Students use an approved agricultural chemical manual to select the best method of disease control for specific situations. 6. Use instructional materials available from chemical companies to assist students in making decisions related to disease control methods.	

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 14 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Using Pesticides in Agriculture

COMPETENCY STATEMENT

017. Follow safety procedures while applying pesticides.

INSTRUCTIONAL OBJECTIVES:

017. 01. Read and interpret a pesticide label.
- 02. List the types of pesticide formulations.
- 03. Explain proper procedures for storing pesticides and disposing of pesticide containers.
- 04. Describe safety procedures and precautions for handling and applying pesticides.
- 05. Explain the difference between restricted and nonrestricted use pesticides.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips and/or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction to Pesticide Safety A. Problems with Using Pesticides B. Pesticide Registration C. EPA Classification of Pesticides D. Requirements for Applicator's Licenses II. Environmental Protection A. Terms and Concepts B. Importance of Environmental Protection C. How Pesticides Benefit Man D. Improper Pesticide Use E. Pollution/Contamination III. Pesticides A. Types of Formulations B. Adjuvants C. Compatibility of Pesticide Mixes 1. Effectiveness of control 2. Noninjurious to crop IV. Labels and Labeling A. Terms and Definitions B. Functions of Labels C. Information Located on Pesticide Labels D. Signal Words E. Reentry Regulations	1. Invite an agricultural chemical expert to speak to the class on registration and classification of agricultural pesticides. 2. Conduct a class debate on banning the use of pesticides in agriculture. 3. Use audiovisual programs on pesticide safety and the importance of environmental protection 4. Show students samples of pesticide formulations and containers. 5. Provide students with a pesticide label and have them identify specific information. 6. Using worksheets, ask students to calculate the quantity of a given pesticide needed for a specific situation. 7. Invite a guest speaker to discuss safe disposal of pesticide containers. 8. Certify (through the Agricultural Extension Service) students eligible for the private pesticide applicator license.	North Carolina Pesticide Manual 34, 35

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
V. Pesticide Formulation and Application A. Terms and Definitions B. Selecting Formulations C. Mixing Pesticides D. Methods of Application E. Application Equipment and Calibration F. Safety Procedures in Application		
VI. Storage and Disposal of Pesticides A. Terms and Definitions B. Guidelines for Safe Storage of Pesticides C. Regulations Regarding Pesticide Disposal D. Recordkeeping and Accountability		
VII. Personal Safety and First Aid A. Terms and Definitions B. "Families" of Pesticides C. Methods of Pesticide Entry into the Body D. Symptoms of Pesticide Poisoning E. Basic First Aid for Pesticide Poisoning Victims F. Safety and Protective Equipment for Applicators		

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 15 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Producing Major Farm Crops

COMPETENCY STATEMENT

018. Describe the most commonly approved practices for producing major farm crops grown in the community.

INSTRUCTIONAL OBJECTIVES:

018. 01. Explain the importance of a selected crop to agriculture in the community, the state, and the nation.
02. Select a variety of seed for a specified crop using information related to the specific growing conditions.
03. Select a field site and soil type for production of a given crop.
04. Calculate the amount of fertilizer and lime needed for a specific crop.
05. Describe appropriate tillage, planting, irrigation, and harvesting practices for a given crop.
06. Develop a pest management system for a specific crop.
07. List the steps necessary to market a given crop.

GENERAL COMMENT:

Supervised agricultural experiences should be an integral part of this unit of instruction. Learning activities may also include field trips and/or appropriate resource persons.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Introduction to Crop Production A. Identification of Crops Grown in the Local Community B. Planning for Profit in Crop Production II. Selecting a Variety of Seed A. Potential Yields B. Standability C. Drought Tolerance D. Resistance to Insects and Diseases E. Maturity Dates F. Crop Quality III. Site and Soil Selection A. Soil Properties Influencing Crop Growth B. Seedbed Preparation 1. Tillage Options 2. Planters and Seeders IV. Planting the Crop A. Recommended Planting Dates B. Planting Depth C. Plant Populations 1. Amounts of seed required 2. Row width and spacing within row D. Fertilization and Liming 1. Nutrient requirements 2. Application methods 3. Timing of application	1. Students develop a written report on an important agricultural crop in the community. 2. Perform germination experiments on local crop species. 3. Invite a guest speaker to discuss variety selection with the class. 4. Have students select an appropriate variety for a specified crop under a given set of growing conditions. 5. Use videotapes or other audiovisual aids to show examples of tillage systems and equipment used in various types of tillage systems. 6. Have students calculate fertilizer and lime requirements for specific crops based upon information provided in class. 7. Conduct field trips or use visual aids to show students different types of irrigation systems. 8. Scout a specific field for insect pests. Have students develop recommendations for control of pests located in the field. 9. Use visual aids or field trips to observe harvest equipment and harvest losses in farm crops.	Agricultural Extension Publications 27, 28, 29, 31, 34, 35

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
V. Irrigation of Agricultural Crops A. Irrigation Scheduling B. Types of Irrigation Systems 1. Advantages/Disadvantages 2. Efficient Use of Water 3. Subirrigation 4. Chemigation VI. Pest Management A. Insect Control B. Disease Control C. Weed Control VII. Harvesting and Storing Crops A. Harvesting Principles 1. Equipment 2. Determining the time to harvest 3. Reducing harvest losses B. Storing Harvested Crops 1. Equipment 2. Maintaining proper moisture VIII. Marketing Farm Crops A. Sources of Markets B. Price Trends and Analysis C. Procedures for Selling Crops D. Sources of Market Information	10. Conduct a field trip to a grain elevator or a tobacco market to observe the marketplace in action. 11. Invite a buyer to discuss the importance and methods of insuring crop quality from harvest to market. 12. Use computer instructional programs related to the production of specific crops for management activities and/or review of specific content. 13. Use AgriData Network to secure current market information related to specific crop commodities.	

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 16 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Welding Out-of-Position

COMPETENCY STATEMENT

019. Demonstrate the ability to weld in horizontal and vertical positions.

INSTRUCTIONAL OBJECTIVES:

019. 01. Recognize the safety hazards involved in making horizontal and vertical welds.
  02. Explain the procedures for making horizontal and vertical welds.
  03. Develop competence in making horizontal and vertical welds.

GENERAL COMMENT:

This unit of instruction is designed to provide additional experience in the area of welding for Agricultural Production and Management II students. Students may apply the skills acquired in this unit on their supervised agricultural experience programs, especially in the area of machinery and equipment repair.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Safety Rules and Regulations A. OSHA Regulations B. Importance of Practicing Safety II. Welding Methods A. Procedures for Making Horizontal Welds 1. Preparation 2. Striking the arc and running the bead B. Procedures for Making Vertical Welds 1. Preparation 2. Striking the arc and running the bead	1. Require observance of ALL safety rules as students complete this unit of instruction. 2. Develop a list of safety rules to follow when making horizontal and vertical welds. 3. Demonstrate safety precautions to be followed while making horizontal and vertical welds. 4. Demonstrate procedures for producing horizontal and vertical welds. 5. Allow for student practice in agricultural welding area. 6. Conduct a class welding contest. 7. Encourage students to participate in the FFA Agricultural Mechanics Contest. 8. Select a welding project that requires out-of-position welding techniques.	37, 38, 39, 46, 47, 60, 62 Lincoln Arc Welding Foundation Materials

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 17 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Using Concrete in Agricultural Buildings and Structures

COMPETENCY STATEMENT

020. Calculate quantities of concrete materials for a given job.

021. Demonstrate the ability to mix, pour, and finish concrete for a given job.

INSTRUCTIONAL OBJECTIVES:

020. 01. Determine the amount of concrete needed and the cost for a given job.

021. 01. Identify materials used to make concrete and how to select them.
    02. List and describe the proper ratio of materials used to make concrete.
    03. Demonstrate proper mixing proceures for small concrete jobs.
    04. List and describe procedures for pouring concrete.
    05. Select an appropriate finish for a given concrete job.
    06. Demonstrate proper use of a trowel, floats, and other concrete finishing tools.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. Learning experiences for student may include improvement projects at home or at school.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Safety Rules and Practices A. Importance of Safety B. List of Rules to be Observed II. Selecting Raw Materials for Quality Concrete A. Cement B. Aggregate C. Water III. Proportioning Raw Materials for the Job IV. Mixing Concrete A. Equipment B. Materials C. Procedures for Mixing Concrete V. Pouring Concrete A. Preparing the Site 1. Subsurface excavation 2. Compaction of the site 3. Grading the site B. Reinforcing Concrete in Forms C. Pouring Concrete in Forms VI. Finishing Concrete A. Equipment B. Timing C. Type of Finish D. Curing Concrete	1. Require observance of ALL safety rules as students complete this unit of instruction. 2. Discuss safety rules with the class. 3. Demonstrate safety precautions in working with concrete. 4. Have students classify aggregate samples into two basic categories, according to screen size. 5. Perform silt and organic matter test to determine the quality of bank-run aggregate. 6. Using worksheets and appropriate charts, have students select the proper water-cement ratio for a given project. 7. Have students construct a small concrete project, selecting the proper materials, mixing, pouring, and finishing the concrete. 8. Demonstrate the proper procedures for completing each step involved in the concrete project.	37, 38, 39, 45

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 18 UNIT LENGTH: 5-15 hours TEACHING UNIT TITLE: Installing Water Systems for Agriculture

COMPETENCY STATEMENT

022. Plan a plumbing job.

023. Perform basic plumbing tasks.

INSTRUCTIONAL OBJECTIVES:

022.01. Select the kind and size of pipe and fittings needed for the project.
  02. Determine the amount of pipe and fittings needed for the project.
  03. List factors to consider in locating outside water sources.
  04. Describe procedures for the protection of plumbing systems.
  05. Measure pipe to fit construction plans.

023.01. Recognize the safety hazards involved in making plumbing installations and doing plumbing repairs.
  02. Select materials needed to make plumbing installation.
  03. Select materials needed to repair plumbing systems.
  04. Demonstrate the ability to install and repair plumbing systems.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. Learning experiences for student may include improvement projects at home or at school.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Planning a Plumbing Job A. Determining Water Demand B. Determining Location of Pipes C. Locating Outside Water Outlets II. Selecting Pipe and Fittings A. Kinds of Pipe and Advantages of Each Type 1. Galvanized 2. Copper 3. PVC/CPVC 4. Cast iron B. Selecting the Proper Pipe Size 1. Sizes available 2. Costs involved 3. Factors to consider III. Plumbing Protection A. Freezing Protection B. Protection from Mechanical Damage IV. Safety Rules and Precautions V. Repairing Plumbing Systems A. Analyzing the Problem B. Selecting Equipment for Repair Work C. Replacing Pipe and Fittings VI. Installation of Plumbing Systems A. Measuring and Cutting Pipe B. Making Connections C. Preventing Leaks	1. Have students lay out a plumbing job using a drawing of an agricultural building. 2. Using worksheets, have students determine the proper sizes of pipe needed for several specific situations. 3. Have students develop a bill of materials for completing a plumbing job. 4. Require observance of ALL safety rules as students complete this unit of instruction. 5. Demonstrate proper procedures for repair and installation of pipe and fittings. 6. Provide for student practice in repair and installation of plumbing, using small-scale student projects.	37, 38, 39, 64, 67

TEACHING UNIT : 19 UNIT LENGTH: 5-15 hours TEACHING UNIT TITLE: Wiring Electrical Circuits

COMPETENCY STATEMENT

024. Define terms associated with electricity and electrical circuits.

025. Describe safety practices for working with electricity.

026. Perform basic electrical wiring tasks.

INSTRUCTIONAL OBJECTIVES:

024. 01. Define various terms associated with electricity.
 02. Explain how electricity is generated.
 03. Read a meter and compute the cost of electricity.

025. 01. Demonstrate safe wiring practices when wiring or repairing electrical circuits.
 02. List basic safety rules related to electricity.

026. 01. Splice electrical conductors according to the latest electrical code.
 02. Select the proper electrical conductors, connectors, and hardware for a given circuit.
 03. Recognize defective electrical circuits and/or devices and make the necessary repairs.
 04. Wire a service entrance panel according to the latest electrical code.
 05. Plan a wiring job for an agricultural building.
 06. Install and maintain a permanent electrical system in an agricultural building.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Basic Electrical Information A. Definition and Uses B. Sources of Electricity C. Electrical Circuits 1. Components 2. Types of circuits a. Series b. Parallel	1. Use audio-visual and visual aids to illustrate scientific principles related to electricity. 2. Invite a resource person from the electric power company to speak to the class on generation of electricity. 3. Use simple wiring boards to illustrate differences between series and parallel circuits.	37, 38, 39, 43, 44, 48, 61, 65, 66
II. Measuring Electricity A. Definition of Terms B. Computing Costs 1. Reading meters 2. Calculating electrical costs	4. Use worksheets involving reading electric meters and calculating costs of electricity.	
III. Electrical Safety Practices A. Basic Rules to Follow B. National Electrical Code 1. Purpose 2. Basic guidelines C. Using Ground Fault Circuit Interrupters	5. Invite an electrician to speak to the class on following the National Electrical Code. 6. Demonstrate the safety features of GFI's by wiring the GFI into a circuit with a short.	
IV. Performing Basic Wiring Tasks A. Tools, Equipment, Supplies 1. Identification 2. Purposes/Functions B. Making Electrical Connections 1. To Conductors 2. To Terminals	7. Bring examples of tools, equipment, and electrial supplies into class for identification. 8. Provide for student practice on making splices and connecting conductors to terminals.	

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
IV. Performing Basic Wiring Tasks (continued) C. Planning a Wiring Operation 1. Estimating materials needed and costs 2. Selecting electrical supplies 3. Developing a written plan a. Electrical symbols b. Diagramming circuits	9. Have students develop a wiring plan for a given agricultural building, including a diagram of all electrical circuits and a bill of materials required to complete the wiring task. 10. Provide for student practice on selected wiring circuits.	
D. Wiring Electrical Circuits (Choose from) 1. Duplex receptacle outlets 2. Single-pole switches, keyless light fixture 3. Three-way switches, keyless light fixture 4. Magnetic switches and controls 5. Service entrance panels 6. Ground fault circuit interrupters	11. Create defective circuits for students to practice locating electrical defects.	
V. Troubleshooting Defective Electrical Circuits A. Locating Faults in Electrical Circuits 1. Safety procedures 2. Special tools and equipment 3. Procedures B. Removing Excess Sag from Wires Between Buildings 1. Safety procedures 2. Tools and equipment needed 3. Procedures C. Splicing Broken Wires Between Buildings 1. Safety procedures 2. Tools and equipment needed 3. Procedures		

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 20 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Maintaining Tractors and Machinery

COMPETENCY STATEMENT

027. Perform routine maintenance on tractors and machinery.

INSTRUCTIONAL OBJECTIVES:

027. 01. Explain the importance of keeping tractors and machinery in safe operating condition.
02. Identify and correct potential maintenance problems.
03. List and describe regular routine maintenance operations on a tractor and/or farm machinery.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Identifying Potential Safety Hazards A. In the Shop B. On the Farm II. Performing Maintenance After 50 Hours of Operation A. Check and Service the Battery B. Check and Adjust the V-Belt Tension C. Lubricate the Clutch-release Mechanism D. Check and Service the Hydraulic System E. Service the Air Cleaner F. Check for Potential Mechanical Problems III. Performing Maintenance After 100 Hours of Operation A. Change the Crankcase Oil B. Replace the Oil Filter C. Service the Crankcase Breather D. Service the Tires E. Check for Potential Mechanical Problems IV. Performing Maintenance After 250 Hours of Operation A. Make Valve Clearance Adjustments B. Service or Replace Spark Plugs (Gasoline tractors only) C. Service the Battery D. Service the Fuel System E. Adjust the Brakes F. Adjust the Clutch G. Check for Potential Mechanical Problems	1. Allow students to practice the maintenance operations for each period of time discussed. 2. Require observance of ALL safety rules as students complete this unit of instruction. 3. Ask students to develop a system for keeping maintenance records on tractors and agricultural equipment. 4. Use owners manuals to locate information related to maintenance procedures and specifications. 5. Visit a repair shop to observe the results of poor maintenance of agricultural equipment.	36, 42, 51, 52, 53, 54, 55, 57, 70

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
V. Performing Maintenance After 500 Hours of Operation A. Service the Distributor (Gasoline tractors) B. Time the Ignition System (Gasoline tractors) C. Check and Service the Starter and Generator D. Service Diesel Fuel Filter E. Service Front Wheel Bearings F. Check and Service the Cooling System G. Check for Potential Mechanical Problems VI. Performing Maintenance After a Year of Operation A. Wash and Wax the Body B. Clean the Engine C. Service the Air Cleaner D. Service the Drive Mechanism E. Service the Hydraulic Systems F. Adjust the Engine Governor G. Check for Potential Mechanical Problems		

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 21 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: **Making Adjustments on Agricultural Machinery and Equipment**

COMPETENCY STATEMENT

028. Make field adjustments on agricultural machinery and equipment.

INSTRUCTIONAL OBJECTIVES:

028. 01. Demonstrate procedures used to adjust tillage, planting, and harvesting equipment to improve field performance.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Principles of Operation A. Tillage Equipment 1. Moldboard plows 2. Chisel plows 3. Disk harrows 4. Cultivators B. Planting Equipment 1. Row crop planters a. Conventional b. No-till 2. Grain drills C. Harvesting Equipment 1. Combines 2. Forage Harvesters 3. Cotton Harvesters 4. Hay Equipment 5. Tobacco Harvesting Equipment II. Adjusting Agricultural Machinery A. Tillage Equipment B. Planting Equipment C. Harvesting Equipment	1. Show slide sets or videotapes on principles of machinery operation. 2. Take a field trip to observe field adjustments being made. 3. Use visual aids to illustrate adjustments made to agricultural machinery and equipment. 4. Provide problem situations and ask students to explain the proper adjustments for equipment. 5. Use computer programs for students to develop individual skills for specific types of agricultural machinery and equipment.	42, 52, 53, 54, 37, 38, 39

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 22 UNIT LENGTH: 3-5 hours TEACHING UNIT TITLE: Controlling a Tractor Under Varying Field Conditions

COMPETENCY STATEMENT

029. Demonstrate the ability to control a tractor under varying field conditions.

INSTRUCTIONAL OBJECTIVES:

029. 01. Recognize the safety hazards involved in operating a tractor.
02. Recognize and be familiar with the leading causes of tractor accidents.
03. Operate a tractor safely.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. Students may ned additional time outside of the regular class time to practice the skills developed in this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Safety Rules and Precautions A. OSHA Regulations B. Importance of Practicing Safety II. Causes of Tractor Accidents A. Farm Causes B. Miscellaneous Causes III. Operating the Tractor Safely A. Cultivation B. Harvesting C. Transporting Products D. Tillage Operations	1. Require observance of ALL safety rules as the students work in this unit of instruction. 2. Make a list of safety rules to be observed while students are operating tractors. 3. Demonstrate safety practices to be followed while operating a farm tractor. 4. Allow students to demonstrate safety practices to be observed while operating a tractor. 5. Develop a list of the 10 most frequent causes of tractor accidents. 6. Provide for student practice in operating a tractor under specific situations outlined by the instructor. 7. Students participate in the FFA Tractor Driving Contest.	42, 51, 56, 69

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 23 UNIT LENGTH: 10-30 hours TEACHING UNIT TITLE: Constructing Agricultural Projects

COMPETENCY STATEMENT

030. Prepare a bill of materials for a construction job.

031. Construct an agricultural project from wood and/or metal.

INSTRUCTIONAL OBJECTIVES:

030. 01. Students will be able to complete orthographic and isometric drawings of a proposed project.
   02. Develop a bill of materials for a given project and calculate the cost of the project construction.

031. 01. Construct a project according to specifications in a given project plan.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. Learning experiences for student may include improvement projects at home or at school. Teachers should assist students in selecting projects within their range of ability.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Making Drawings A. Front view B. Top View C. Side View II. Developing a Bill of Materials III. Constructing the Project A. Following the Project Plan B. Using Proper Tools and Equipment C. Assembling the Project D. Finishing the Project	1. Students will draw and include all views according to the teacher's instructions. 2. Students will convert bill of materials according to specifications of side materials are sold, example: board feet. 3. Students will present alternate ways of constructing a project. 4. Construct a wood or metal project in the vocational agriculture shop.	37, 38, 39, 41 Project Plans Available from Curriculum Materials Centers

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 24 UNIT LENGTH: 2-3 hours TEACHING UNIT TITLE: Identifying Fixed and Variable Costs

COMPETENCY STATEMENT

032. Identify fixed and variable costs of an agricultural enterprise.

INSTRUCTIONAL OBJECTIVES:

032. 01. Define fixed costs and variable costs.
 02. Identify costs associated with agricultural production as variable or fixed.

GENERAL STATEMENT:

Teachers should use examples from the local community and from students' supervised agricultural experience programs in teaching this unit.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Agricultural Enterprise Costs A. Fixed or Overhead 1. Definition (DIRTI) 2. Depreciation 3. Interest 4. Repairs (fixed) 5. Taxes (property) 6. Insurance B. Variable or Operating 1. Definition 2. Types of variable costs a. feed b. seed c. fertilizer d. chemicals e. labor f. fuel	1. Use references or transparencies to teach definitions of terms. 2. Use computer programs and/or printouts to select fixed and variable costs of enterprises. 3. Have students make a list of all costs for a specific enterprise and classify them as fixed or variable. 4. Compare costs of production of agricultural products in the U.S. with those in other countries.	71, 72, 75, 76, 81

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 25 UNIT LENGTH: 2-4 hours TEACHING UNIT TITLE: Preparing Inventories and Financial Statements for Agricultural Businesses

COMPETENCY STATEMENT

033. Complete an inventory of an agricultural business.

034. Prepare a financial statement for an agricultural business.

INSTRUCTIONAL OBJECTIVES:

033. 01. Explain the importance of developing an inventory.
02. Prepare an inventory.
03. Calculate depreciation on a fixed asset.

034. 01. List types of financial statements.
02. Define net worth statement, profit and loss statement, and cash flow statement.
03. Complete a net worth statement, profit and loss statement, and cash flow statement.

GENERAL STATEMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction. Students may receive practical application of these principles with ownership or placement experience programs.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Developing An Inventory A. What to Include B. When to Complete and Inventory C. Importance and Use of Inventories 1. Property taxes 2. Net income 3. Replenishing supplies II. Establishing Inventory Values A. Depreciation Methods 1. Straight line 2. Declining balance 3. Sum-of-the-years-digits 4. ACRS III. Types of Financial Statements A. Net Worth 1. Definition and uses 2. Assets and liabilities B. Determining Profit or Loss 1. Definitions and uses 2. Recording receipts/disbursements 3. Non-cash adjustments a. Depreciation b. Change in inventory c. Value of products used (not sold) 4. Determining net income C. Determining Cash Flow 1. Definition and uses 2. Actual and projected cash flow 3. Cash or check transactions only	1. Use class discussion to identify the types of items to include in an inventory. 2. Have students complete an inventory of items used for one enterprise on a farm. 3. Use computers to prepare inventory lists. 4. Assign depreciation problems to students to be completed on paper and/or on the computer. 5. Take field trip to determine inventory methods used in agribusiness. 6. Have students complete an inventory of the agriculture department. 7. Students calculate net worth, complete a profit and loss statement, and a cash flow statement of an agricultural business. 8. Students use a computer to complete the above financial statements. 9. Invite a loan officer to speak on the importance of accurate financial statements. 10. Assist students in preparing for the FFA Farm Business Management Contest.	71, 72, 73, 74, 75, 76 80

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 26 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Securing Credit for Agricultural Businesses

COMPETENCY STATEMENT

035. Explain the various sources of credit.

036. Compute interest on long term and short term loans.

037. Complete a loan application.

INSTRUCTIONAL OBJECTIVES:

035. 01. List the major sources of credit for agricultural businesses.
    02. Describe the eligibility requirements for each source.

036. 01. Define principal, interest, annual percentage rate, and time.
    02. Compare different methods of computing interest.
    03. Compute interest and payments on long and short term loans.

037. 01. Define terms used on a loan application.
    02. Complete necessary forms to obtain a loan.

GENERAL STATEMENT:

Teachers should use resources available through the farm credit system in teaching this unit, including resource persons. This unit of instruction has direct application across many of the instructional units in this curriculum.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Sources of Agricultural Credit A. Individuals B. Agricultural Supply Companies C. Banks D. Insurance Companies E. Farm Credit Service F. Farmers Home Administration G. Other Sources II. Eligibility Requirements A. Restrictions for Each Source B. Requirements Common to Each Source III. Calculating the Cost of Credit A. Definition of Credit Terms 1. Interest 2. Principal 3. Annual Percentage Rate (APR) 4. Time 5. Long-Term Loan 6. Short-Term Loan B. Methods of Computing Interest 1. Simple Interest 2. Add-on Interest 3. Discount Interest 4. Balloon Interest 5. Amortized loans IV. Applying for Agricultural Loans A. Types of Applications B. Information Needed	1. Invite a credit or loan manager to speak to the class. 2. Show a film or videotape on farm credit. 3. Obtain loan information from a lender and provide to students. 4. Students use tables to determine loan payments at given interest rates and loan lengths. 5. Students use computer programs to determine loan payments at given interest rates and lengths of the loan. 6. Students calculate simple and compound interest problems on worksheets. 7. Secure samples of loan applications from lending institutions and have students examine applications. 8. Have students complete a loan application for a simple agricultural enterprise.	71, 72, 73, 74, 75, 77 80, 81

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 27 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Marketing Agricultural Products

COMPETENCY STATEMENT

038. Describe the various factors which affect marketing of agricultural products.

039. Compare the types of marketing strategies for agricultural products.

INSTRUCTIONAL OBJECTIVES:

038. 01. List and explain five factors that affect the marketing of agricultural products.
02. List three government programs that affect marketing of agricultural products.
03. Identify the factors to consider in selecting a market.
04. Analyze factors to consider in determining when to sell or buy.
05. Describe the effects of consumer preferences on marketing.
06. Describe the effects of international agricultural production on marketing.

039. 01. List and describe the different types of marketing available to the producer.
02. List the advantages and disadvantages of using the futures market compared to other types of marketing strategies.
03. Describe vertical integration as it relates to the poultry and swine industries.

GENERAL STATEMENT:

Students should be encouraged to incorporate marketing strategies in their supervised agricultural experience programs in order to make practical application of the principles taught in this unit.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Factors Affecting Marketing of Agricultural Products A. Supply 1. Local 2. National 3. International B. Demand 1. Local 2. National 3. International C. Government Programs D. Weather E. Health and Science F. International Trade G. Time of the Year H. Location I. Size of the Operation II. Marketing Strategies A. Cash Sales B. Forward Contract Sales C. Storage (Delayed Sales) D. Hedging in the Futures Market	1. Invite resource person to speak to class on government programs that affect the marketing of agricultural products. 2. Have students complete written and/or oral reports on factors affecting marketing of agricultural products. 3. Use computer networks to access market information at national and international levels. 4. Take a field trip to a local market during the harvest season. 5. Show a film about crops grown in other countries (i.e. coffee). 6. Have students compare market prices for an agricultural product at various times of the year. 7. Invite a guest speaker to explain advantages of forward contracting for agricultural products. 8. Have students use market reports from local newspapers to determine market trends. 9. Use films or videos on futures markets and hedging.	71, 73, 75, 76, 80

AGRICULTURAL PRODUCTION AND MANAGEMENT II · **COURSE NO. 6812**

TEACHING UNIT : 28 UNIT LENGTH: 2-3 hours TEACHING UNIT TITLE: Completing Federal and State Income Tax Forms

COMPETENCY STATEMENT

040. List the types of information needed to complete federal and state income tax forms for agricultural businesses.

INSTRUCTIONAL OBJECTIVES:

040. 01. Define income, deductions, business expenses, and depreciation.
  02. Identify information needed for income tax filing.

GENERAL STATEMENT:

This unit should be taught in March or April as students and/or their parents are in the process of completing tax forms. The IRS has educational materials available related to farm taxes.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Income Taxes for Agricultural Businesses A. Information Needed 1. Income 2. Deductible expenses a. Production inputs b. Depreciation c. Property taxes d. Other expenses B. Tax Forms Needed 1. Federal a. 1040 b. Schedule F 2. State C. Getting Assistance in Filing Taxes	1. Invite a CPA to speak on information needed to complete tax forms. 2. Have students complete a simple tax form using a sample problem. 3. Assist students with computer software using tax preparation programs.	78, 79, 80

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 29 UNIT LENGTH: 10-15 hours TEACHING UNIT TITLE: Managing Private Woodlands

COMPETENCY STATEMENT

041. List and describe the principles involved in managing private woodlands.

INSTRUCTIONAL OBJECTIVES:

041. 01. Discuss the importance of forestry as an industry to North Carolina.
02. Describe the history of forest management in the United States.
03. List some present problems facing the forestry industry today.
04. List factors which affect woodland management.
05. List and explain three methods of forest regeneration.
06. Demonstrate proficiency in estimating volumes of wood for use as lumber and pulpwood.
07. Identify 10 common trees grown for commercial uses in the community.
08. Discuss the methods used to make intermediate cuttings.
09. Explain harvesting techniques used in the forest industry.
10. List the 4 most commonly used methods of reproducing a forest.

GENERAL COMMENT:

Supervised agricultural experience programs may be an important part of this unit of instruction. Improvement projects at home or at school may be used to provide additional learning experiences for this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Importance of Forestry A. Definition of Forestry B. History of Forest Management C. Present Problems in Forestry D. Harvesting Forest Products II. Factors Affecting Woodlot Management A. Access B. Drainage C. Topography III. Regeneration of Forests A. Natural Regeneration B. Artificial Regeneration C. Site Preparation D. Post-planting Treatments IV. Identification of Common Trees V. Measuring the Forest A. Measuring Tree Diameter and Height B. Estimating Timber Volume VI. Intermediate Cuttings A. Thinning B. Liberations C. Sanitation Cuttings D. Removal of Undesirable Trees E. Prescribed Burning	1. Invite a local representative of the Forestry Service to speak to the class about forest management. 2. Have the students make a list of everything in their home that comes from the forestry industry 3. Make a list in class of the by-products of wood. 4. Conduct a debate with one team in favor of modern day forest practices and the other in opposition. 5. Select a small woodland plot close to school and show students how important drainage and topography is in forestry. 6. Take a field trip to various tracts of cleared timber and show students the different ways the forests are regenerated. 7. Demonstrate the proper use of a Biltmore stick in measuring trees and estimating timber volume. 8. Invite a representative from a timber company to explain to students how to cruise timber. 9. Let students contact lumber companies and pulpwood plants and obtain current prices for timber. 10. Calculate for students the value of a tract of timber using current prices.	Ag Extension Bulletins 26, 33

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
VII. Harvest Cutting A. Selective Cutting B. Shelterwood Cutting C. Seed-tree Cutting D. Coppice Cutting E. Clear Cutting	11. Show students on a field trip how different types of insects and diseases affect trees.	
VIII. Reproducing the Forest A. Natural Seeding B. Direct Seeding C. Cutting (sticks) D. Plant Seedlings		
IX. Insect Control		

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 30 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Managing Wildlife on Private Land

COMPETENCY STATEMENT

042. List and describe principles involved in managing wildlife on private land.

INSTRUCTIONAL OBJECTIVES:

042. 01. List 3 advantages of wildlife.
     02. Discuss the habitat requirements for wildlife.
     03. Discuss procedures used to manage wildlife.
     04. Explain how federal and state legislation have influenced wildlife populations in North Carolina.

GENERAL COMMENT:

Supervised agricultural experience programs should be an integral part of this unit of instruction.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Value of Wildlife II. Habitat Requirements A. Food B. Cover C. Water D. Home Range and Territory III. Management Procedures A. Game Refuges B. Habitat Development and Improvement C. Coordination with other Resources D. Hunting Regulations E. Predator Control F. Artificial Stocking IV. Individual Landowners and Game Management V. Legislation and Game Management	1. Have students make a list of the different types of wildlife in the community. 2. Have students make a list of the available food to wildlife. 3. Invite the local wildlife biologist to speak to the class on wildlife management. 4. Take students on a field trip to a game refuge to see how wildlife is managed. 5. Invite a wildlife officer to discuss regulations concerning wildlife with the class. 6. Take field trips to farms where wildlife management is practiced to see its effects. 7. Identify farms without wildlife and arrange a visit. After the visit develop a plan that could help manage wildlife on the farm.	33

AGRICULTURAL PRODUCTION AND MANAGEMENT II **COURSE NO. 6812**

TEACHING UNIT : 31 UNIT LENGTH: 5-10 hours TEACHING UNIT TITLE: Harvesting Wildlife

COMPETENCY STATEMENT

043. Describe safe practices in harvesting wildlife species.

INSTRUCTIONAL OBJECTIVES:

043. 01. **Demonstrate the ability to handle firearms in a safe manner.**
02. **Discuss the hunter's responsibilities.**
03. **Identify the five actions of firearms and types of handguns.**
04. **Describe the history of firearms.**
05. **Identify the various types of ammunition and explain their components.**
06. **Explain key hunting and fishing laws.**
07. **Demonstrate survival and first aid techniques to use if a person is lost or injured.**
08. **Explain the signs used to identify wildlife in the field.**

GENERAL COMMENT:

Additional practice time may be required in order for students to gain proficiency in this competency.

CONTENT	SUGGESTED TEACHING ACTIVITIES	RESOURCES
I. Hunter Responsibility II. Wildlife Conservation and Management III. Firearms A. Rifles B. Shotguns C. Cleaning and Storage D. Ammunition E. Firearm Handling and Safety F. Marksmanship and Shooting Fundamentals IV. Wildlife Identification V. Game Care VI. Specialty Hunting A. Muzzleloading B. Handguns C. Bow Hunting IX. Special Concerns A. Alcohol and Drugs B. Turkey Hunting C. Trapping D. All-Terrain Vehicles E. Hunting Dogs X. Range Work	1. Teach students the N.C. Hunter Education Course sponsored by the N.C. Wildlife Resource Commission. 2. Invite the local wildlife officers to speak to the class on the topics of firearm safety, games laws, types of weapons, and/or hunter responsibility.	N.C. Hunter Safety Manual 33

REFERENCES FOR AGRICULTURAL PRODUCTION AND MANAGEMENT 6811, 6812

In a dynamic industry such as agriculture, new reference materials are continually being developed and current references are being revised. This list of references should be used as a guide by the teacher of Agricultural Production and Management, but should be updated annually at the local level in order to remain current with the changes occurring in the agricultural industry.

Textbooks and Reference Materials

1. *Official FFA Manual* (latest edition). Alexandria, VA: National FFA Supply Service.
2. North Carolina Chapter Guide to FFA Activities (latest edition). Raleigh, NC: Department of Public Instruction.
3. *FFA Student Handbook*. Alexandria, VA: National FFA Supply Service.
4. *Roberts Rules of Order* (latest edition).
5. Russell, K.L. *The How in Parliamentary Procedure* (5th ed.). Danville, IL: Interstate Publishers, Inc.
6. Bender, R.E., Hansen, C.K., Newcomb, L.H., & Taylor, R.E. *The FFA and You* (3rd ed.). Danville, IL: Interstate Publishers, Inc.
7. Lillis, B.L. *Instant Speaking Course*. Danville, IL: Interstate Publishers, Inc.
8. Henderson, M. & Rucker, H.J. *A Guide to Parliamentary Practices*. Danville, IL: Interstate Publishers, Inc.
9. Binkley, H.R. & Byers, C.W. *SOE Programs in Agriculture.* Danville, IL: Interstate Publishers, Inc.
10. Bundy, Clarence E. and Diggins, Ronald V. *Livestock and Poultry Production* (5th ed.), Englewood Cliffs, NJ: Prentice-Hall, Inc..
11. Bundy, Clarence E. and Diggins, Ronald V. *Dairy Production*, Englewood Cliffs, NJ: Prentice-Hall, Inc..
12. Bundy, Clarence E., Diggins, Ronald V., and Christensen, Virgil W. *Swine Production*, Englewood Cliffs, NJ: Prentice-Hall, Inc.
13. Diggins, Ronald V. and Bundy, Clarence E. *Beef Production*, Englewood Cliffs, NJ: Prentice-Hall, Inc.
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15. Ensminger, M.E. *Poultry Science* (2nd ed.), Danville, IL: Interstate Publishers, Inc.

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18. Gillespie, James R. Modern Livestock and Poultry Production (2nd ed.), Albany, NY: Delmar Publishers, Inc

19. Juergenson, E. M. Handbook of Livestock Equipment (2nd ed.), Danville, IL: Interstate Publishers, Inc.

20. Quinn, Thomas. Dairy Farm Management, Albany, NY: Delmar Publishers, Inc.

21. Youtz, H. G. and Carlson, A. C. Judging Livestock, Dairy Cattle, Poultry, and Crops, Englewood Cliffs, NJ: Prentice-Hall, Inc.

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23. Baker, J.K. & Greer, W.J. Animal Health: A Layman's Guide to Disease Control. Danville, IL: Interstate Publishers, Inc.

24. Ensminger, M.E. Horses and Horsemanship (6th ed.). Danville, IL: Interstate Publishers, Inc.

25. Ensminger, M.E., Oldfield, J.E., & Heinemann, W.W. Feeds and Nutrition. Danville, IL: Interstate Publishers, Inc.

26. Holland, I.I., Rolfe, G.L., & Anderson, D.A. Forests and Forestry (4th ed.). Danville, IL: Interstate Publishers, Inc.

27. Bishop, D.D., Carter, L.P., Chapman, S.R. & Bennett, W.F. Crop Science and Food Production. New York: McGraw Hill Book Company.

28. Boone, L.V., Richer, A.C., & Wilson, H.K. Producing Farm Crops (3rd ed.). Danville, IL: Interstate Publishers, Inc.

29. Delorit, R.J., Greub, L.J., & Ahlgren, H.L. Crop Production. Englewood Cliffs, NJ: Prentice-Hall, Inc.

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36. Brown, A.D., & Strickland, R.M. Tractors and Small Engine Maintenance (5th ed.). Danville, IL: Interstate Publishers, Inc.

37. Burke, S.R. and Wakeman, T.J. Modern Agricultural Mechanics (2nd ed.). Danville, IL: Interstate Publishers, Inc.

38. Cooper, E.L. Agricultural Mechanics: Fundamentals and Applications. Albany, NY: Delmar Publishers, Inc.

39. Phipps, L.J., and Reynolds, C.L. Mechanics in Agriculture (4th ed.). Danville, IL: Interstate Publishers, Inc.

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44. Richter, H.P., and Schwan, W.C. Wiring Simplified (36th ed.). Danville, IL: Interstate Publishers, Inc.

45. White, G.R. Concrete Technology (3rd ed.). Albany, NY: Delmar Publishers, Inc.

46. Jeffus, L. and Johnson, H.V. Welding: Principles and Applications. Albany, NY: Delmar Publishers, Inc.

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55. *Fundamentals of Service: Fuels, Lubricants, and Coolants*. Moline, IL: Deere & Company.

56. *Fundamentals of Machine Operation: Safety*. Moline, IL: Deere & Company.

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60. *Developing Shop Safety Skills*. Athens, GA: AAVIM.

61. *Home Electrical Repair*. Athens, GA: AAVIM.

62. *Arc Welding*. Athens, GA: AAVIM.

63. *Care and Operation of Small Gasoline Engines*. Athens, GA: AAVIM.

64. *Basic Plumbing Skills*. Athens, GA: AAVIM.

65. *Electrical Wiring*. Athens, GA: AAVIM.

66. *Understanding Electricity and Electrical Terms.* Athens, GA: AAVIM.

67. *Planning for an Individual Water System.* Athens, GA: AAVIM.

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77. Hartman, J.D. *Agricultural Credit--A Global Enigma*. Danville, IL: Interstate Publishers, Inc.

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80. State Income Tax Forms and Instruction Booklet. Raleigh, NC: Department of Revenue.

81. *Doane's Farm Management Guide* (Latest ed.). Danville, IL: Interstate Publishers, Inc.

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Other Reference Materials:

Sources of Audio Visual Materials (Videos, slides, filmstrips, etc.)

84. AAVIM, 120 Driftmier Center, Athens, GA 30602.

85. Vocational Education Productions, California Polytechnic State University, San Luis Obispo, CA 93407.

86. Instructional Materials Laboratory, 10 Industrial Education Building, University of Missouri-Columbia, Columbia, MO 65211

87. Ohio Agricultural Education Curriculum Materials Service, Room 254, 2120 Fyffe Road, The Ohio State University, Columbus, OH 43210-1099.

88. Hobar Publications, 1234 Tiller Lane, St. Paul, MN 55112.

89. RMI Media Productions, 2807 West 47th Street, Shawnee Mission, KS 66205.

90. Photocom Productions, P.O. Box 3135, Pismo Beach, CA 93449.

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93. Teaching Aids, Inc. P.O. Box 1798, Costa Mesa, CA 92626

94. Video Trend, P.O. Box 524, St. George, Utah 84770.

95. Vocational Agriculture Service, College of Agriculture, University of Illinois, 1401 South Maryland Drive, Urbana, IL 61801.

96. Creative Educational Video, 5147-A 69th Street, Lubbock, TX 79424.

97. Venard Films, LTD., Box 1332, Peoria, IL 61654.

98. Massey-Ferguson Video Training Systems, 1901 Bell Avenue, Des Moines, IA 50315.

Sources of Computer Programs in Agriculture:

99. AAVIM, 120 Driftmier Center, Athens, GA 30602.

100. Interstate Printers & Publishers, Inc., Danville, IL.

101. Midwest Agribusiness Services, Inc., 6739 Glacier Drive, West Bend, WI 53095-9360.

102. Ohio Agricultural Education Curriculum Materials Service, Room 254, 2120 Fyffe Road, The Ohio State University, Columbus, OH 43210-1099.

103. Vocational Agriculture Service, College of Agriculture, University of Illinois, 1401 South Maryland Drive, Urbana, IL 61801.

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113. Michigan Vocational Education Resource Center, 133 Erickson Hall, Michigan State University, East Lansing, Michigan 48824.

North Carolina Agricultural Extension Service Publications

The North Carolina Agricultural Extension Service provides a wide variety of quality educational materials on agricultural production and management topics in the form of bulletins, pamphlets, etc. at a very minimal cost. These materials are updated regularly with new items added to the list. A complete list of materials available from the Agricultural Extension Service is available at each county extension office.